PHOTOGRAPHING TURNINGS
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There are lots of reasons to photograph your work, like keeping a record of the dozens (hundreds?) of pieces you've sold (yeah, right!). Or, to send a few shots to your deadbeat cousin, Charles, to suggest to him that if he got off his lazy butt and learned a skill he might be able to earn a living and quit living at his mom's.
You'd think that by age 43... (Oops! Sorry. I need to get a new family.)

I'm going to discuss the most critical type of image – a studio quality portrait of your work that is suitable for submission to juried shows, gallery consideration, or publication.

So what is a studio quality photograph of a woodturning? You want the turning to fill the image area with no distractions in the frame. You don't want glare or harsh shadows. You want the contours of your piece to be clear and the details apparent. There should be good tonal separation between the turning and the background, and the background color should complement your piece. Your photo should enhance your turning.

And by the way, the methods shown here work equally well in photographing any modest sized object such as other wood working projects and carvings, and in fact also works quite well when photographing shiny objects like jewelry.

Basics

All of the methods described here are directed at four basic concepts: (1) a very diffused light source, (2) minimization of reflections, (3) proper matching of film to light source, and (4) an attractive uncluttered background.

1. A diffused light source provides soft shadows and reduces reflections while emphasizing the form of the turning.
2. A polarizing filter over your lens further reduces reflections.
3. All light sources don't provide the same color spectrum for which common daylight balanced film is designed. A matching combination of film and light source must be used.
4. The background should not draw attention to itself and should enhance the appearance of your turning.

Let's talk about equipment first, and then I'll describe three methods of taking the pictures.

Film and Equipment

Camera
Any 35mm SLR (single lens reflex) or digital camera will do as long as it allows manual exposure control (f-stop and shutter speed). You need the manual exposure controls because automatic exposure modes probably won't provide the correct exposure for this type of photography. For digital, as little as a three mega-pixel camera will make an excellent 8″ x 10″ print. A two mega-pixel camera will produce a good 5x7.

Lens
The issue here isn't so much what focal length you should use as much as it is the close focusing ability of the lens. The lens should probably be greater than a focal length of 100 mm and focus close enough so that you can fill the frame with your turning.

Film, digital?
The first issue in selecting a film is to decide whether you want prints, slides, or digital files. In reality, you can start with any of the formats and get any other, but some approaches may be more convenient than others. Let's consider the choices:

- Negative film – intended for prints – if you only need prints, this is the way to go.
    - Advantages
        - Tolerates more exposure error than slide film.
        - Cheapest way to get a print.
        - Scanning can produce a very good digital file.
    - Disadvantages
        - Color is dependent on processor's skill and equipment calibration. Each time you order a print, it may be different. You might have to work with a cooperative processor to get the colors right (provide a swatch of background color).
        - If you need a slide you've got a bunch of extra steps and expense to get it.

- Slide (transparency) film – simplest way to get slides.
    - Advantages
        - Color accuracy is independent of the processor.
        - Cheapest way to get a slide.
        - Scanning can produce a very good digital file.
    - Disadvantages
        - Not tolerant of exposure error.
        - Costs more to get a print from a slide than from negative film, and takes longer.

- Digital image (photo taken with a digital camera)
  Always take your pictures at the highest quality your camera allows. You can always decrease the quality later, but you can't increase it.
    - Advantages
        - No film or processing cost.

- Total control of results (if you are sufficiently familiar with digital manipulation software).
- Don't need special bulbs of filters to get proper color.
- Fast results.
    - o Disadvantages
        - Although it's possible to get a slide from a digital file should you need it, this service requires additional cost and time.

- Digital image (photo taken with film, then the slide or negative is scanned to produce a digital file)
    - o Advantages
        - All your options are available: digital file, print, slide.
        - Total control of results.
        - Highest quality (most pixels) way to get a digital file (assuming a high resolution film scanner is used) – higher quality than taking image with a digital camera.
    - o Disadvantages
        - Most time consuming and expensive way to get a digital file.

If you only need prints primarily, use negative film or digital. If you may need slides primarily, use slide film (some galleries or jurors may preview your work by requiring slides). If you need a digital image file (from which prints are easy to make, and slides can be produced), use a digital camera, or scan the slide or negative. Scan the negative or slide if possible - you will lose image quality if you scan a print.

To get a slide from a digital file get instructions from Express Digital Images at www.expressdigitalimages.com/prod02.htm. If you need a slide or negative scanned (and it's beyond the ability of most home flat bed scanners to provide sufficient quality), have it done by a photo finisher that has the capability.

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Now, if we're not going digital, we have to decide what film to use. The issue in selecting the film is to match the film to the light source. If you use daylight balanced film (the most commonly available type) with tungsten (incandescent) lamps, your pictures will have a very reddish cast. Unfortunately there are no daylight balanced lamps available. So we have to use a film balanced for tungsten lamps or use daylight film with a filter over the lens to filter out the excess red from the lamps. I'll discuss the lamps more a bit later, but as far as film is concerned, this is what I think are good choices:

Slide film: Kodak Ektachrome 320T (tungsten)
Print film: Kodak Max 800 (daylight) – use an 80A filter with this film

The color balance issue is simpler when taking the pictures with a digital camera - you don't have to use special photo flood bulbs - regular incandescents or halogens will do

(see "Lights, Reflectors, Stands"). Most digital cameras have "white balance" controls. This is a way for you to tell the camera what sort of light source you have. For incandescents set your white balance to "tungsten", or better yet, if your camera allows, use its "manual (sometimes called "custom") white balance" mode. Digital manipulation software like Adobe Photoshop (or to keep costs reasonable, Adobe Photoshop Elements) allows further color adjustment.

What do you do if you need a black and white image? Maybe some publication to which you're submitting only prints black and white images. The easiest solution is to ask the editor if they can take your color negative, slide, or digital file and convert it to gray scale (black and white). Otherwise you can do it yourself if you have a scanner and digital manipulation software, or take it to a photo finisher and have them do it. As a last choice, take the picture with black and white film (slide and negative B&W films are available).

Tripod and cable release
In order to use small apertures (large f-stop number) which provide a large depth of field (broad range of image area that is in focus) you will be using slow shutter speeds – probably in the neighborhood of one or two seconds. To avoid camera shake (which results in image quality degradation) a tripod and cable release is necessary. No kidding; a tripod isn't enough – the cable release is essential. When you push the shutter release, no matter how careful you are, you will jiggle the camera enough to visibly degrade your photo.

Filters
A polarizing filter is needed to reduce undesirable glare on the surface of your turning. Of the two types of polarizers, "circular" polarizers are required for most modern auto-focus cameras (check your camera's instruction manual); either "linear" or "circular" polarizers may be used on older cameras. (Note: "linear" and "circular" do not refer to the shape of the polarizers – they look the same.) Polarizing filters are mounted in a way that allows the filter to be rotated. The effect provided by the polarizer changes as you rotate it; rotate it to get the most pleasing results.

An 80A light balancing filter is needed when using daylight balanced film with tungsten (3200K) tungsten photoflood bulbs such as ECT bulbs.

Lights, reflectors, stands
The slide film I've found most suitable for this kind of photography, Kodak Ektachrome 320T, is balanced for tungsten lights, but not common household lamps from the hardware store. Do GE lamps put out the same color as Sylvania? Who knows? You have to use photoflood lamps (see resources) because they're designed to produce a particular color spectrum.

Previously I said that films are "balanced" for a particular quality of light. "Daylight" film provides correct color rendition under sunlight conditions. Therefore we have to use a light source that is suitable for the film to avoid a color cast (depending on the particular mismatch of film and light, pictures may have a greenish, bluish, reddish cast). To avoid unpleasant color rendition with the films that I recommend use ECT (500 watt)

photoflood lamps. These produce a light that has a "color temperature" of 3200 Kelvin.
This is an exact balance for Kodak Ektachrome 320T. Kodak doesn't make a tungsten
balanced print film that is suitable for our needs so I've recommended the ECT bulbs
with Kodak Max 800 (daylight) film with an 80A filter over the lens. The 80A filter
corrects for the mismatch between the daylight print film and the tungsten lamps.

You might be able to get away with using household tungsten lamps with print film and
the 80A filter. Although this isn't a perfect match, a cooperative photo processor can
probably make the proper color correction when he makes his prints. If you try this, use
at least 250 watt bulbs to keep shutter speeds within reason (still at f/22 as discussed later
in this article), and run some test exposures to determine the proper shutter speed.

You can get photoflood bulbs at well stocked photo dealers and some specialty bulb
stores. Turn the lights on only as needed – the ECT bulbs have a sixty hour life and are
moderately expensive (about $7 each).

You can buy cheap reflectors at hardware stores that will be adequate for our needs.
You'll need some sort of stand for each light. For two of the methods described you'll
need one light, for the third you'll need two lights.

For digital shots I use 300 watt tungsten lamps. You may not find these at your home
improvement store, but a good lighting supplier should have them. You can probably
get good results using 150 watt bulbs which are easier to come by, but I haven't tried
them.

Room lighting should be dim so that the lighting you apply is the primary light source.

Backdrop system
You'll need one of the three systems described. Select the background color to provide
good separation between the turning and the background, such as a light background for
dark wood. Use background colors that won't attract attention away from your work.
Lighter background colors tend to reflect light better into the shadows in the underside of
your turnings, while darker backgrounds provide a more dramatic effect.

When using a digital camera I use a light neutral gray background and make it any color I
want later with my computer (see "Digital images – coloring your background").

Table
You may need a table on which to place your backdrop system.

Exposure

I've determined an exposure that should be close for each method. This exposure
assumes that you are using the recommend film, a polarizing filter (plus an 80A filter
when using print film), and ECT photoflood bulbs. It also requires that the lights be set
up at the distance described in each method. The camera to subject distance doesn't
matter. Even if you do all this, your setup may not exactly match mine, and there may

be exposure variations, so the first time you do this you should take a series of pictures at varying exposures – this is called "Bracketing" (this is most important with slide film, print film is more forgiving). This means you take one shot at your best estimate of the correct exposure, then one at a slower shutter speed, and one at a faster shutter speed (no change in f-stop). Example: f/22 at 4 seconds, 2 seconds, and 8 seconds.

Slide film – intolerant of exposure error - Bracket in ½ stop increments:
- original shutter speed
- 2/3 original shutter speed
- 1-1/2 original shutter speed

Example: f/22 at 4 seconds, 3 seconds, and 6 seconds.

Digital camera:
Don't bracket; just retake the picture with exposure adjustments until it looks right.
Don't forget to use the polarizing filter with your digital camera.

Once you've found the correct exposure, record it along with exactly how you've set up your lights and backdrop so that you can avoid bracketing in the future.


Details

Method one – cheap, easy, but works
Simple and inexpensive, but lacks versatility – very restrictive in size of turning.

Needed:
- Tall white kitchen trash bag
  Bags vary in height; get the tallest – about 4 ½ feet, give or take an inch – otherwise you'll have to trim the cardboard.
- White cardboard 30" x 42".
- Paper for seamless background: 14" x 40.5". Make several in different colors.
- Wooden board approximately 12" x 24".
- One light with stand.
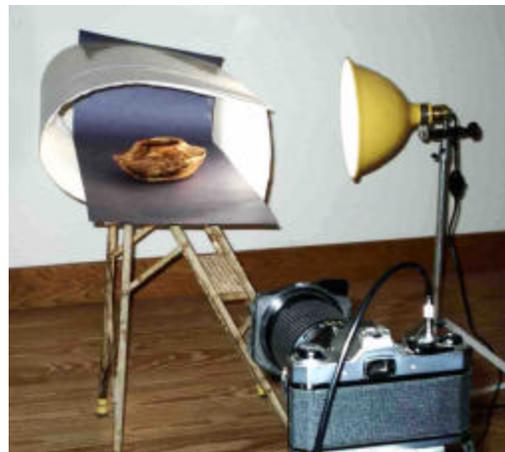
Cardboard and bag setup

Construction:
Curve the cardboard into a "U" with the white side inward, and slip it into the bag. Slit the bottom of the bag and side the cardboard in the rest of the way.

Ivy bagging the cardboard **Slitting the bottom of the bag** **Completed**

Stapling to board

Put a flat side of the "U" on a piece of scrap board and tack it down with a stapler. Slide your seamless background into the tube, bringing it out the back and over the top. Tape it to the top.

Procedure:
Put the turning in the tube toward the back. Shine the light through the bag, with the light forward of the turning, moving it around a bit to get the effect that pleases you. Keep the light 1 foot away from the bag. With the camera set up on the tripod, and the polarizing filter (and 80A filter if using print film) and cable release installed, orient the camera so that the turning nearly fills the frame. Make sure that only the turning and seamless background show. Turn the polarizing filter until you eliminate as much glare as possible.

Slide film:
Take the first picture at an aperture of f/22 and a shutter speed of ½ second.
Bracket (still at f/22) two more pictures at shutter speeds at 1/3 second and ¾ seconds. (Older cameras won't have these shutter speeds; in that case use ¼ second and 1 second for the bracketing exposures.)

Print film:
Take the picture with the aperture set at f/22 and the shutter speed at 1 second.

Even though this method looks simplistic (OK, it is simplistic!), it works quite well for smaller turnings, and it has another advantage. It can be turned on end as shown in the photo "completed" (don't staple the tube to a board in this configuration) so that you shoot down through the tube, in order to photograph flat objects.

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Method 2 – greater versatility
Allows taller pieces than Method 1, but the diffusion box is a hassle to make.

Needed:
- Table top seamless background support.
- White or light colored paper for seamless background: 19″ x 40″.
- 2 small binder clips.
- Diffusion (soft) box over light and stand.
- White card about 16″x 20″ (dimension not critical) to use as a reflector.
- Assistant or second stand.
- Table.

Simple tabletop seamless background

Procedure:
Clip the paper to the top of the background support. Set the turning on the seamless table. Put the light with the diffusion box 10 inches away, at about 45° to the turning. Have your assistant hold the reflector card on the other side of the piece 10 inches away (or less) and adjust the angle of the card to get the most pleasing result (or use a second stand with some sort of fixture to hold the reflector).

With the camera on the tripod, and the cable release and polarizer (and 80A filter if using print film) installed, fill the frame with your turning and adjust the polarizer for the most pleasing look.

For even better lighting, eliminate the reflector and use a second soft box light source. The two soft boxes should be at different distances from the turning. This will provide shadows that give an attractive sense of shape to your work. You'll have to do some testing to determine the correct exposure with this variation of method 2.

Slides:
Take the first picture at an aperture of f/22 and a shutter speed of 2/3 second
Bracket (still at f/22) two more pictures at shutter speeds at 1/2 second and 1 second.
(Older cameras won't have 2/3 second available; in that case use ½ second as the base exposure and only one bracket exposure of 1 second.)

Print film:
Take the picture with the aperture set at f/22 and the shutter speed at 1-½ second.

<u>Method 3 – Slick and versatile</u>
Provides best lighting of the three alternatives and is still pretty easy to build.

The seamless background frame doesn't have to be free standing or collapsible like mine, although that makes it more convenient.

Needed:
- Seamless background frame.
- Two yards of white translucent fabric.
- Paper for seamless background: 19.5" x 38". Make several in different colors.
- 2 small binder clips.
- Two lights.
- Two light stands (or a homemade boom arrangement like I use).
- Two pieces of cardboard about 16" x 20" to block light glare.
- Four push pins.
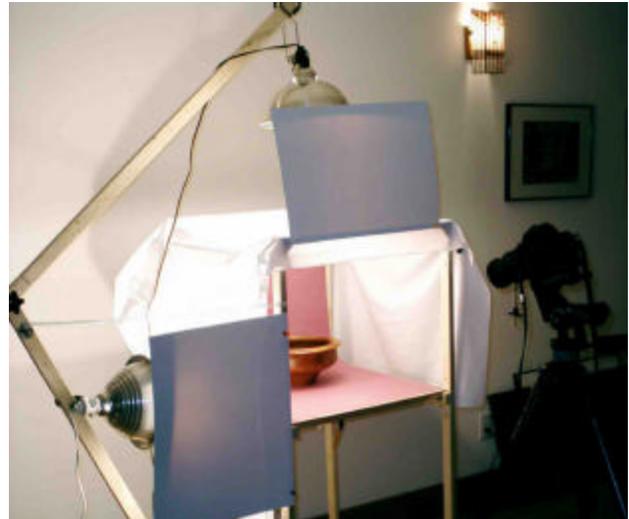
Dual light system with diffusion cloth draped over frame

Procedure:
Clip the background paper into place. Drape the cloth over the background frame. Set up the two lights, one on top, 10 inches away, and one on the side, 10 inches away. The lights should be forward of the position of the turning. Attach the two pieces of cardboard to the frame as shown in the photograph above with the push pins. This blocks the glare of the light from causing image degrading lens flare.

Position your turning on the seamless background behind the position of the lights and adjust the position of the lights (maintaining the 10 inch distance) to provide the most pleasing lighting.

With the camera on the tripod, and the cable release and polarizer (and 80A filter if using print film) installed, fill the frame with your turning and adjust the polarizer for the most pleasing look.

Slides:
Take the first picture at an aperture of f/22 and a shutter speed of 2/3 second bracket (still at f/22) two more pictures at shutter speeds at 1/2 second and 1 second. (Older cameras won't have 2/3 second available; in that case use ½ second as the base exposure and only one bracket exposure of 1 second.)

Print film:
Take the picture with the aperture set at f/22 and the shutter speed at 1-½ second. It's amazing how much impact the quality of your photographs will have on your chances for getting published or in a juried show. You put everything you have into creating

extraordinary turnings – it's easy to produce top quality professional grade photos that will show them to best advantage.

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Digital images – coloring your background

To color the neutral gray background in your digital image any color you like follow the following steps (commands shown are from Photoshop, other software will have similar features):

1. Perform the basic work flow (see the explanation in the document <u>Digital, Digital, Digital</u>).
2. Select **feather** and set for about 2 pixels.
3. Using a selection tool such as the **magic wand** or **pen** select the vessel.
4. **Inverse** your selection – you had selected your turning; inverting selects everything but your turning.
5. Select **gradient tool**. Use the **foreground to transparent** option.
6. Click on **foreground color**.
7. Select the color you want to use from the **color picker**.
8. Use **opacity** to get the intensity of color you want and allow shadows to be visible.
9. Draw a line (left click your mouse, hold, and drag, then release) from top to bottom or across a diagonal to get the effect you want.
10. Don't like what you did? There may be ways to undo provided by your software, but if not, you can always close the image without saving it, then open it again and start over.

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Construction information

This article doesn't provide construction details for the two wood frame background supports but they're easy to build, and you should be able to figure out enough from the following photos and dimensions to make something similar.

The framework of each background assembly is made from 1″ x 2″ lumber and ¼″ plywood.

<u>Freestanding background</u>– see "Materials List – Freestanding Background"
This assembly is 54″ tall, 21-½″ wide, and 24″ deep. The platform is 36″ from the bottom. The lower

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boom member is 52″ long, and the upper boom member is 44″. Light chain or cord is use to stabilize the boom near its joint. The cloth used for diffusion was the cheapest white cotton cloth I could find (2 yards at $2 per yard). A couple of binder clips hold the seamless background in place.

The seamless background paper is available for $0.75 per yard at Texas Art Supply in a variety of colors. The gray light cardboard used for a seamless background is an acid free board costing about $5.00 at Texas Art Supply.

Tabletop background

This rig has a 22.5″ deep x 19″ wide base and a riser of 22″ tall x 19″ wide. It uses the same type of paper as the freestanding background.
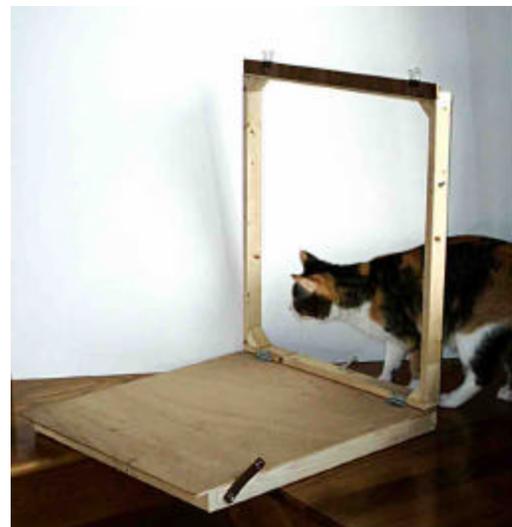

Table top background open (Shula checking assembly quality)

Table top background closed (Braveheart keeping it closed)

Diffusion (soft) box
This box provides diffusion for the lamp used with the tabletop background. It has to be fitted to whatever reflector that you use. It's 7.5" deep and is 18" x 18" at it's wide end. Mine is made from cardboard duck taped together with a wooden internal frame. The diffusion material is drafting Mylar (available at art supply stores).

Technical Notes
Exposures recommended in this article were determined using a gray card and spot meter, and tested using the recommended films.

All images used to illustrate this article were taken with an inexpensive two megapixel digital camera. Although the pictures aren't nearly as good as can be taken with the better equipment suggested by this article, it does demonstrate the surprising quality available from even a low end camera.

Materials List – Free Standing Background

Lumber
The furring strips listed are the inexpensive approach that I used; better lumber could certainly be substituted.

Select straight 8 foot lengths of 1x2 furring strips, or (better yet) cut strips 1-1/2″ wide from 1″ (actual thickness is ¾″) straight pine (or better) boards:
4) 54″
4) 20″
6) 24″
1) 43-1/2″
1) 52″
3) 18-1/2″
1) 18-1/2″ x 1″ x ½″ (cut from furring strip)
12) Corner braces cut from scraps

1) 23-1/2″ x 19-7/8″ x ¼″ plywood
1) 1″ x 21-1/2″ x ¼″ plywood

1) 1-3/4″ x 7″ x 1″ pine lumber

Hardware
6) ¼-20 T-nuts
5) ¼-20 x 1-1/2 knob screws
1) ¼-20 x 1 hex head bolt
6) 1-1/4″ diameter x ¼″ hole fender washers
8) ¼-20 x 2″ round head screws
8) ¼-20 nylon insert nuts
2) Small screw eyes
5feet) Light chain
2) Small "S" hooks
2) ¼-20 x 1-1/4″ round head screws
3) ¼-20 nuts
1) ½″ wood screw
1) Flat washer for wood screw
1) Carrying handle

Miscellaneous
2) Small binder clips
10 inches) Flat or round elastic
2) Reflector lamp fixtures with spring clips
2 yards) white cotton cloth – I used the cheapest stuff I could find
1) 12″ Velcro strap (optional)
1) Plastic folder to store diffusion cloth (optional)

Resources and Supplies – stores in italics are in the Houston area

Kodak Ektachrome 320T film
Good photo supply stores
Camera Co-op
Pro Photo

Kodak Max 800 film
Most photo supply stores
Drug stores, discount stores (Walmart, Target, etc.)
Camera Co-op
Pro Photo

ECT photoflood lamps
Good photo supply stores
Some lighting stores
Camera Co-op
Pro Photo
Lights Unlimited

80A filter
Good photo supply stores
Camera Co-op
Pro Photo

Mylar drafting film for diffusion box
Art supply
Drafting supply
Texas Art Supply

Cloth for diffusion drape
Any sewing supply

Cardboard for bag and cardboard setup and diffuser card
Art supply
Hobby/craft supply
Texas Art Supply
Hobby Lobby
Michaels

Paper for seamless background
Art supply
Texas Art Supply

Reflectors/lamp sockets
Most hardware and home improvement stores

Binder clips - IDL Mfg. and Sales Corp., no. 20 small
Office supply stores

Digital file converted to slide
www.expressdigitalimages.com/prod02.htm
HPI (Houston Photo Imaging)

Scanning slides or negatives to produce digital file
Many photo processors offer this service
HPI (Houston Photo Imaging)
One Great Photo Lab