

Welcome to

Digital Photography Workshops

by

Tern Media, LLC.

&

Milton Heiberg Studios

To serve your photo education needs better, please fill out the accompanying questionnaire (on separate attachment) and return to Tern Media by simply clicking the “Submit by E-mail” button in the upper right corner of the form.

Photography Workshop Questionnaire

Name

Address

City State Zip Code

Country

Home Phone Work Phone

Cell Phone Email

What interest in photography

☐ Landscape ☐ Nature Bird, Animal, Wildflowers ☐ Photography ☐ Wildlife ☐ Nature Photography ☐ Wildlife

Type of equipment owned

☐ Personal Camera ☐ Nikon ☐ Canon ☐ Pentax ☐ Other

Specific subjects, disciplines, or applications of any form

Camera

Photography publications that you subscribe to or purchase often

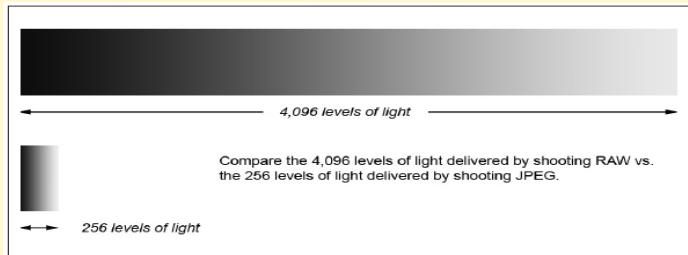
☐ Popular Photography ☐ American Photographer ☐ Outdoor Photographer ☐ Nature Photographer ☐ Other

What would you like to accomplish next from this workshop in general or specifically?

Submit by E-mail Submit by Mail

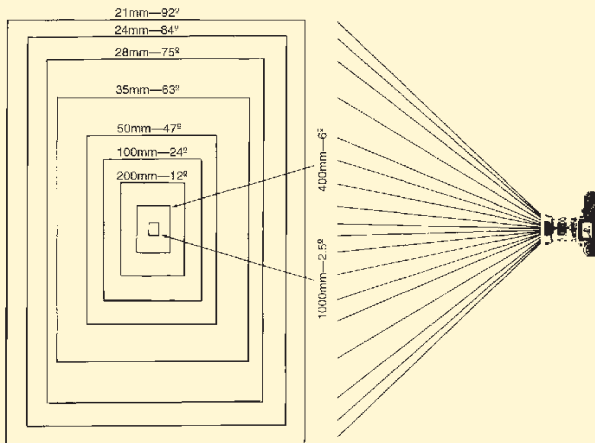
Digital Photography—Basics

1. Rules. No cell phones
2. My email address: photonat@cfl.rr.com
3. ***Magic Lantern Guides*** for individual camera models. Harmon or Colonial.
& ***The Essentials of Nature Photography*** by Milton Heiberg
4. Why shoot RAW?



5. Lens focal length:

Super wide angle (15mm - Fish-eye)
Wide angle (18mm - 35mm)
Normal (50mm - 55mm)
Medium telephoto (85mm - 135mm)
Telephoto (200mm - 1000mm +)
Zoom (variable focal lengths)



6. Perspective:

Wide angle = open background, keystone
Normal = matches human perspective
Telephoto = compressed view



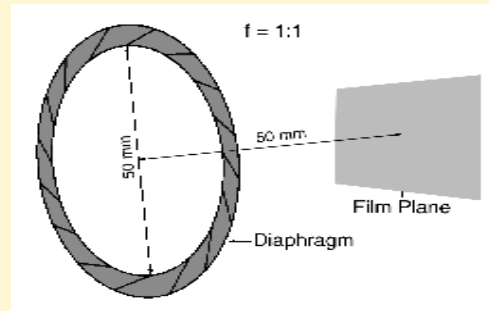
21mm wide angle lens



1000mm telephoto lens

7. Lens aperture and f/stops:

The f/stop number represents the capacity of a lens to transmit light to the focal plane. As a photographer, this is the most important definition it can have to you.



TECHNICAL DEFINITION OF F/STOPS The f/stop ratio here is $f = 1:1$ or $f/1$. It is the ratio of the aperture to the focal length when the lens is focused on infinity. If the aperture in this diagram were reduced to 25 mm, the ratio would be 25:50, or 1:2 or $f/2$.

8. Shutters and shutter speed:

- Leaf shutters (Rangefinder & View) in lens
- Focal plane shutters SLR cameras - in camera body at the focal plane.
- DSLR cameras - electronic.

9. ISO rating (film or digital):

(alias ASA, DIN, EI)

Slow	ISO 100
Medium	ISO 200
Fast	ISO 400 - 3200

Doubling ISO on camera increases speed by 1-stop.

Halving ISO on camera decreases speed by 1-stop.

10. Balance of light:

Water bucket and spigot analogy

Light = water

Aperture = spigot opening (large aperture lets in lots of light)

Shutter Speed = water flow (short shutter speed—short flow)

ISO speed = bucket size (High ISO speed—small bucket & fast fill)

$1/\text{focal length} = \text{slowest shutter speed for hand held shooting.}$

11. Focusing:

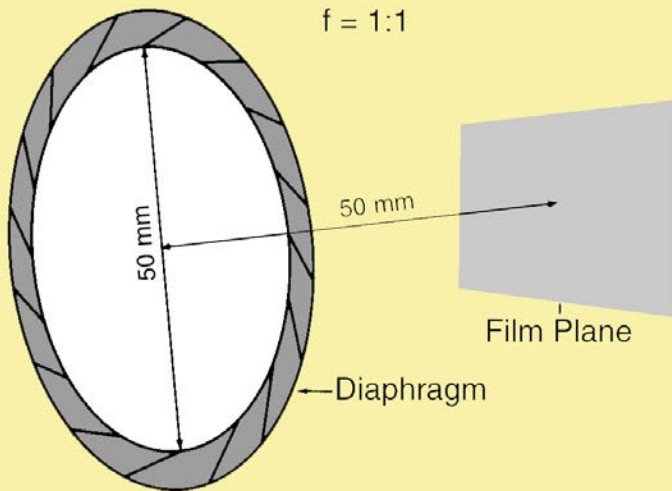
Manual vs. AF

Autofocus: In 1-shot mode, depress shutter release button halfway while subject is at AF sensor, and hold. Then compose frame and fully depress shutter release

12. Camera motion and stability:

Tripods vs IS or VR (Image Stabilization/vibration reduction)

A good sturdy tripod will always be a valuable tool.



F-stops

An f-stop represents the ratio of the aperture size to the focal length of any focal length lens.

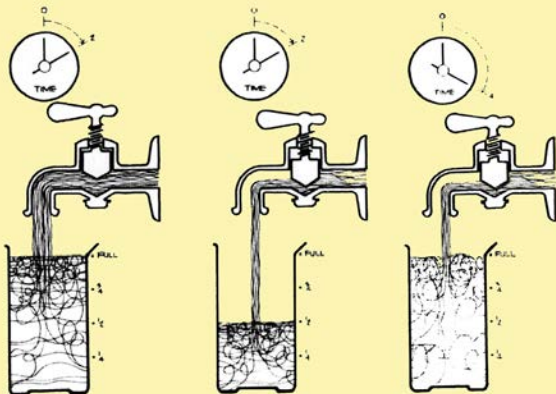
eg., $f-8 = 1:8$ (the aperture diameter = $1/8$ of the focal length)

With a 50mm lens the aperture would be 6.25mm

With a 135mm lens the aperture would be 16.9mm

Therefore, to get past the mental block of **LARGER** numbers being **LESS** exposure:

Think of the f-stop number as the denominator of a fraction



Spigot (Aperture) fully opened for 2 seconds (Shutter speed) fills the bucket (Film or CMOS Sensor)

Spigot (Aperture) halfway for only 2 seconds (Shutter speed) fills only half the bucket (Film or CMOS Sensor)

Spigot (Aperture) halfway opened for 4 seconds (Shutter speed) fills the bucket (Film or CMOS Sensor)

Shutter Speeds

The plain number on the shutter speed side of the LCD panel represents a fraction of a second.

eg., $125 = 1/125$ of a second

$500 = 1/500$ of a second

$1000 = 1/1000$ of a second

and so on . . .

If that number contains a

“

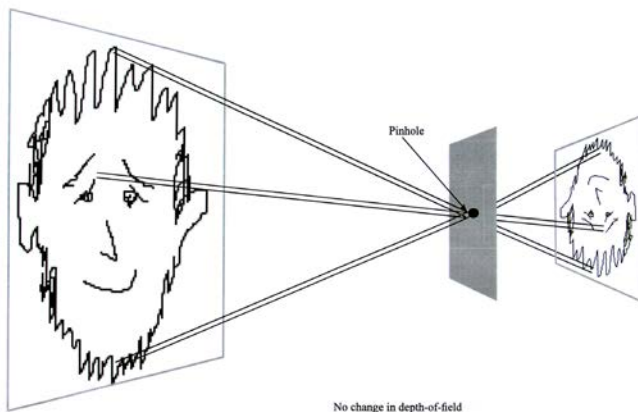
then it represents full seconds.

eg., $15'' = 15$ seconds

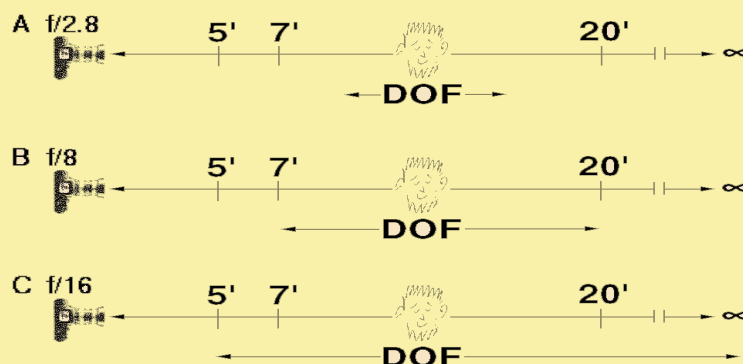
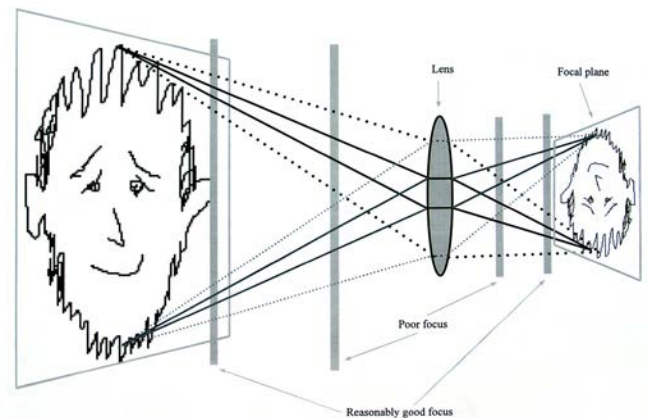
$2''5 = 2$ and $1/2$ seconds

and so on . . .

Depth of field with Pinhole Camera



Depth of Field




Copyright © 2009

MILTON HEIBERG STUDIOS
PHOTOGRAPHY
www.miltonheiberg.com

Camera Set-up

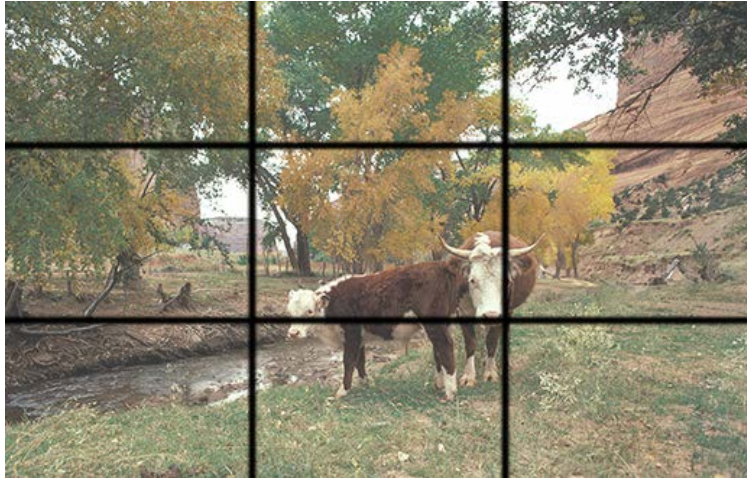
On Camera Body and Back Screen

1. Set your exposure mode to "**A**" or "**Av**" (aperture priority or aperture value)
2. Go to Menu & set the following:
 - **Quality:** Set to "RAW" (If you *don't* have Photoshop, then set to "RAW + L")
 - **White Balance:** AWB and leave it there forever
 - **Color Space:** Adobe RGB or RGB 1998
 - **Picture Style:** (Canon set **Neutral**; Nikon set "Optimize Image" to **Normal**)
3. View last exposure (or any exposure)
4. Activate your **Histogram**. Beware: This action is in different places in different camera models of each brand. But all digital cameras have a histogram available on the back screen. (You may have to go fishing, or—heaven forbid—read the manual ☹.)
 - Canon 40D or later—hit **Info** button several times.
 - On many Nikon models hit the bottom of the 4 circular buttons one or more times. D3000 & D5000 series—call for help. It's well hidden ☹!
 - Some camera models require hitting the Display [**DISP**] button one or more times.
5. Once you have located the histogram, make it permanent. Its the screen that should come up automatically after each exposure.
6. Locate your "**Exposure Compensation Scale**." It is usually inside the viewfinder, at the bottom. It should look something like this: -2 | 0 | +2
7. To increase or decrease the exposure, find the button on the camera that looks like this:  Many camera models require you to depress this button while spinning one of the wheels to change the exposure setting.
8. Set aperture to **f/11** for daytime subjects. f/8 or f/5.6 for subjects in shade.
9. Set your ISO to "**200**" for a sunny or bright day
10. For fast moving subjects: **ISO 400** or **800**, and set the lens to its **largest aperture**. This should give you a shutter speed fast enough to stop a flying bird (but not a speeding bullet ☺).
11. Flash:
 - Set Exposure mode to "**P**" to use light from flash only (best for hand-held indoors).
 - Set to "**A**" or "**Av**" (**recommended**) or "**Tv**" for outdoor fill-in flash. (Tripod would be helpful in low light situations.)

Composition Tips

- **Rule of thirds:**

Place the subject or point of interest $\frac{1}{3}$ down (or up) and $\frac{1}{3}$ in.



- The **KISS** rule:

**Keep
It
Simple
Stupid!**

Not very polite, but it gets the point across.

In other words—**leave out the unessential**. If the material is not essential to the story that the picture is trying to tell, then crop it out.

- Think in terms of **B&W FORMS**. Use color as embroidery. With few exceptions, a good composition should work well in B&W.

1. Look for linear subjects that link forms together, and **overlap some forms**.
2. Forms, such as water, meadows, pavement, or the sky, can be expanded or contracted by **adjusting the camera's elevation**.
3. **Move around** to include or exclude material, or to enlarge or reduce the size of forms within the frame.

- Think **vertical or horizontal** according to the leading lines of the subject matter.

- Zoom back or step back and **take a 2nd frame** that will include material for possible **cloning** in Photoshop.

Nature Photography Pointers

Equipment:

- Lens: minimum 300mm, preferably a 100–400mm for flying birds.
- Heavy tripod with a Gimbal-type head for a 500mm+ lens.
- Flash unit with a Better Beamer attachment.

The Subject:

- Love your subject more than your camera. Get to know animal behavior.
- Get Down and Dirty.



Shoot from the level of your subject when practical.

- Elevate or lower the camera, or move side to side—to control form sizes and include or exclude the background horizon. A little bit of this movement goes a long way.
- Blur-out backgrounds with a large aperture. This works well with telephoto lenses.
- Know the rules of composition. The Rule of Thirds, the KISS rule (Keep It Simple Stupid), the Portrait Rule of Thirds (bridge of the nose one-third down centered).



This "Portrait Rule-of-Thirds" is my own rule that I use for human portraits. It works quite well with animal and flower subjects.

- The very first rule of composition: **There are no rules**—they are guidelines. **You are an artist—do what you want!** But know them, and when to break them.

Evaluating a Photograph

Anyone can look at a photograph and tell you what they like or dislike about it. Quite often, however, something just doesn't seem to make it and you just can't put your finger on it. In these cases break down the elements of the picture to identify what is wrong or missing. The following are some terms to label and describe these elements.

Content—Point of Interest

- What is it a picture of? It is your message. The content should be of interest to the viewer. If well done, it should compel the interest of a viewer who is not particularly interested in the subject and change his or her mind.

Lighting

- This is the single most important element of image quality. Be conscious of what the light is doing to your subject.
- Does it have good contrast, or is it flat? Does it have dark shadows that enhance form? Is the light warm or cool?
- *Direction or angle-of-incidence*: Is the light illuminating the subject to bring out detail (overhead or frontal), or would soft side lighting give the subject a more desirable warm and misty mood?

Form

- Are the blocks of elements balanced in size and shape? Is the subject connected in a rhythmic flow within the other element of the composition, or is it isolated? Which *should* it be?
- Are there patterns or texture that add or interfere with the attention given to the point of interest?
- Is it static or dynamic, and which *should* it be?

Composition

- Should the rule of thirds apply here? It's a great starting point!
- Is the subject facing into the picture, or leading the viewer's eye out?
- Are shadows adding to the composition by connecting the elements, or destroying it?
- The size of the subject and the background should be in balance with each other within the frame.
- Backgrounds should be simple and within the subject's expected environment.

Point of View

- Consider the position of the camera. Should it be low to the ground or elevated?
- Consider the angle of view (focal length of lens).
- What are the distances (camera-to-subject-to-background)?

With these points in mind, ask yourself "How could I have improved this picture?"

More Photo Tips

Milton's Top Ten List

1. Love your subject more than your camera. Learn all you can about your subject whether it's a person, place, or plant. A good photograph will show the passion.
2. But love your camera anyway—know the tools of your trade.
3. Buy the best lenses you can afford. Good glass makes a difference. Upgrade your other equipment later.
4. Practice, practice, practice—persistence eventually wins over talent (tortoise and hare theory).
5. Study the masters to see what they did right. Mine were Ansel Adams and Elliot Porter. I recommend them.
6. f/22 and be there. OK-OK, f/8 if you're still using film—but BE THERE!
7. Know the rules of composition—and when to break them.
8. Think in Black and White—then add color as your embroidery, i.e., think in terms of forms. Use color, but don't be dazzled by it.
9. Early to bed and early to rise, put the dawning sun before your eyes. It is the best time and light.
10. Don't let bad weather keep you home (easy for me to say—I live in Florida). Some of my best mood shots were taken with approaching or clearing storms.

For a more detailed elaboration, read **Milton's Top Ten List** at:

<http://www.miltonheiberg.com/images/04-Phototips-and-Articles/Milton's-Top-Ten-List.pdf>

Some common sense rules that are often forgotten

1. Do not crop the feet of a full-length animal, person, or tree—even if the subject is standing in tall grass, or behind a low wall or fence. Make believe you have x-ray vision, and could see the feet. Then add a little more space below where the feet would be if seen. This adds a completion to the subject's form.
2. For head and shoulder portraits, use a semi-telephoto lens of at least 70mm. Any lens wider than this will render a slight barrel distortion that you may not notice, but the subject will not see the face that he or she sees in the mirror. I like the effects of a 105mm or a 200mm lens.
3. Shoot from the level of your subject—especially children and pets. This puts the subject more at ease with the photographer, and the picture will show the mood.
4. Never delete images in the field. It's easy to make a mistake. Or a valuable part of a frame may go un-noticed. Delete only in the computer.
5. Set up your camera and tripod in the parking lot before a walk—be ready.
6. Wrap the camera strap around your neck when carrying it on a tripod, and around your wrist or neck when shooting hand-held.
7. Pack extra batteries and media cards.
8. Make a list of your equipment, including serial numbers when traveling—for customs check and theft insurance. Do not store this list in your camera bag—carry it in your wallet or purse.

Digital Photography Workflow

The photographer's workflow, as I see it, has 3 major parts.

1. The Camera

Preparing the camera equipment for maximum creativity.

- **Shooting mode:** A (Nikon), Av (Canon), or M (any camera)
- **Settings:** RAW, RGB 1998, Neutral Picture Style
- **Watch closely:** Histogram + Exposure Compensation Scale
- **Philosophy:** Creative Imagination

2. The Computer

Storing and processing the images for output

- **Tools:** Lightroom, Photoshop, NIK/Google software plug-ins
- **Organize:** Library—Date, File number, & Location
- **Enhancement:** Use SHADOW-HIGHLIGHT-CONTRAST preset

3. The Show

Your visual message to the viewer

- **Social media, web site, slide shows, or prints:** Direct from Lightroom
- **Other media:** Export at 300dpi or full size

1. The Camera

Set-up

In the camera's menu, use the following settings:

- "A" or "Av" shooting mode (manual mode—with training wheels)
- Quality—RAW
- Color space—Adobe RGB 1998
- Picture style—"Neutral"
- Make histogram visible on back screen

Exposure & maximum flexibility

Watch the histogram (Fig. 1): The most workable data are in the upper two-thirds of the graph. Too far to the left loses shadow detail. Too far to the right risks highlight "blowouts" if the data go past the limits of the f/stop's dynamic range.

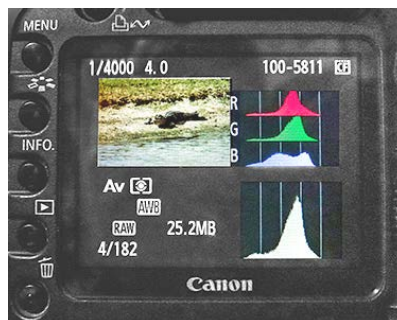


Fig. 1: The Histogram in RGB & Monochrome

Figures 2 & 3 show where the most data are in a RAW image.

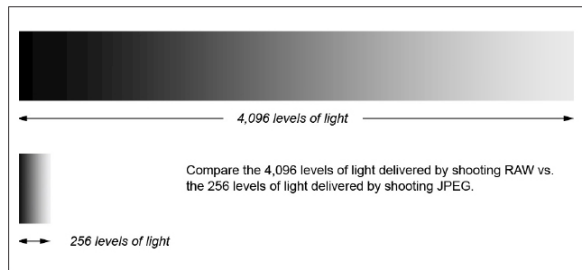


Fig. 2: The reason to shoot RAW

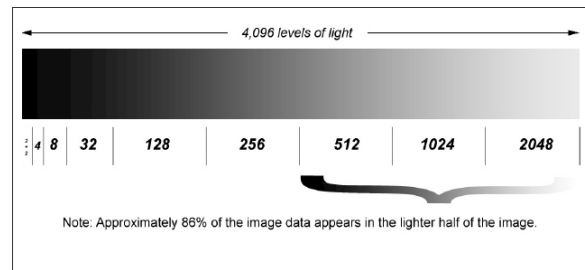


Fig. 3: Lighter areas have stronger data

Use the Exposure Compensation Scale: It appears in both the back screen and the eye piece. Get used to using the eye piece so as not to take your eye away from the scene. It should look something like this:

-2 .. | .. 0 .. | .. +2

To increase or decrease the exposure, find the button on the camera that looks like this:

Many camera models require you to depress this button while turning the control wheel.

TIP: Don't forget to set it back to "0" for the next scene.

2. The Computer: Storage & Processing

Storage

Organization: The advantage of a well-thought-out system is finding an image quickly—or finding it at all. So I label and store all photos using the procedures mentioned below in *Lightroom's Library Mode*.

At present I have three 4TB external hard disks, plus three more for backups. Then an additional three backup disks that sit in a bank deposit box—and get swapped every three months. Nothing wrong with redundancy when it comes to computers.

- HD-1: Everything but photography
- HD-2: RAW images
- HD-3: Working and finished images

There are several good systems available for organizing images. After trying or using most of them, I've gone over to **Lightroom** for the ease of jumping in and out of **Photoshop** and the **NIK/Google** software plug-ins. And I'm glad I did. Many photographers consider Lightroom to be the best for digital photo processing.

Lightroom's Library Mode (Standard operating procedure at the end of every shoot):

- Empty the media cards into HD-2 using Lightroom's import facility. Lightroom allows you to rename your images. Name them with *Date of capture, Original file number, & Location*.
TIP: Maintain the *ORIGINAL DATE & FILE NUMBER* given to **each image** by the camera, and keep it with every subsequent copy of that image *forever*.
- Name each new **folder** keeping the *ORIGINAL DATE*, plus the *Location and Subject*.
- When the images appear at the bottom of the screen, run through them and hit the "P" key for **Pick** for the best images. If you see a better image down the row, go back and hit the "U" key for **Unpick**. Don't bother with ratings of 1, 2, or 3 or color codes for now. Later, I will color code the Opus Magnums.
- Sort by **Pick**.
- Take a little extra time to attach "Keywords" to each of the best images. Lightroom makes it easy. (*I wish I had not skipped this stage early in my digital photo career.*)

At this point I move to *Lightroom's Develop Mode*.

Processing

Lightroom's Develop Mode: This is where most photo processing is done. However, there may be some photos that need extra help from **NIK/Google's** plug-in programs—and/or **Photoshop**. If the image needs work in Photoshop's **Layers** or **Content Aware** (Photoshop's magic feature) use them. If you right click on an image icon, you will get a menu of the apps-du-jour. The great feature of Lightroom is that no matter what changes you make to your photo, the original Raw image is kept intact, and is retrievable.

- The first steps: Color Temperature and/or Tint (if needed); Density and Color controls, & crop (e.g., Exposure/Contrast/Clarity/Vibrance/Saturation); and Sharpening and Noise Reduction—only if you are not going to do more work in other applications.
- At this point you may consider making your own Presets in **User Presets** (Fig. 4). If you find yourself doing the same adjustments on each photo within a shoot, make a preset of those adjustments. Make a set of adjustments on one photo such as seen in Fig. 5. Then click on the "+" in the Preset panel (Fig. 4). Name the Preset. Then do the rest of the similar photos with one click each. A great time saver!

TIP: A favorite preset of mine is to minimize the Highlights Slider (all the way to the left) and maximize the Shadows Slider (all the way to the right). Then tweak the exposure and contrast slider to taste (Fig. 5). Name the Preset **SHADOW-HIGHLIGHT-CONTRAST** (Fig. 4).

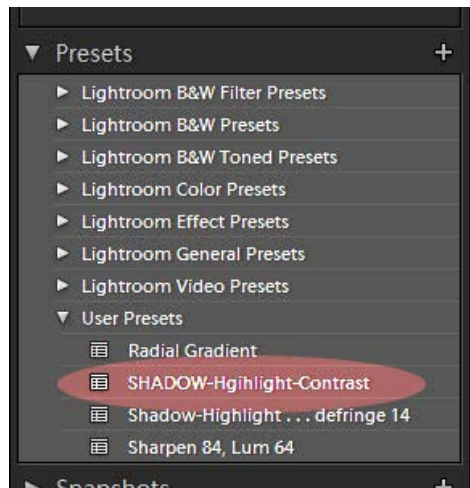


Fig. 4: Develop mode – Presets

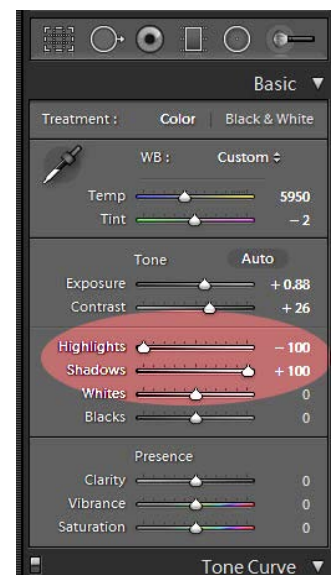


Fig. 5: Develop mode – Basic

- The biggest time saver is the **Synchronize** feature. If the exposure, color cast, contrast, or any other attribute is off throughout a group of images, do the correction work on one of them. Then select the rest of the group and click on the **Synchronize** button. Shazam! They are all corrected. In some cases it's best to do this procedure before **Picking**.

TIP: You can do your picking in either Library or Develop mode.

- If an image needs more work, then right click on that image to open it in another application, such as Photoshop, any of the NIK/Google software list, or another compatible software.
- The NIK/Google software applications can be opened in either Photoshop or directly from Lightroom. The two that I use most frequently are **Vivesa** for "spot" color and density controls, and **Sharpener** when all other work is finished.
- If an image was made with a high ISO (800 or higher) or has noisy shadow areas, I will start with NIK's **Dfine 2**. Also (contrary to NIK's standard procedures), I will sometimes use it to reduce noise caused by sharpening.

- I am hooked on Photoshop's **Layers**. When a procedure has an overall effect that you are not completely satisfied with, simply create a mask for that layer and paint out the undesirable to a percentage that you can live with. If the effect was an overall "TOO MUCH," such as sharpening, simply move the **Opacity** slider of that layer to the *left* to "thin down" the effect.
- One of the most annoying distractions in an image composition is bright areas that steal attention away from the subject. They often occur in the corners of the frame with bright sky areas. Lightroom and other programs have vignette facilities that handle this annoyance, but they are limited in flexibility. So I've devised a procedure that will render a workable layer and will subdue these areas gradually and selectively. For the complete description, go to: http://www.miltonheiberg.com/Upcoming_2-ARTICLES-and-PHOTOTIPS.htm and click on Using "Milton's REVERSE RADIAL GRADIENTS" in Photoshop.

3. The Show: Output

Much of output to social media, slide shows, client proofs, and prints can be done easily directly from Lightroom—a great time saver. Lightroom has a convenient method of creating slide shows and web galleries using its own collection system. Most important these days is the Social Media—at the bottom of the left side of the screen (Fig. 6):

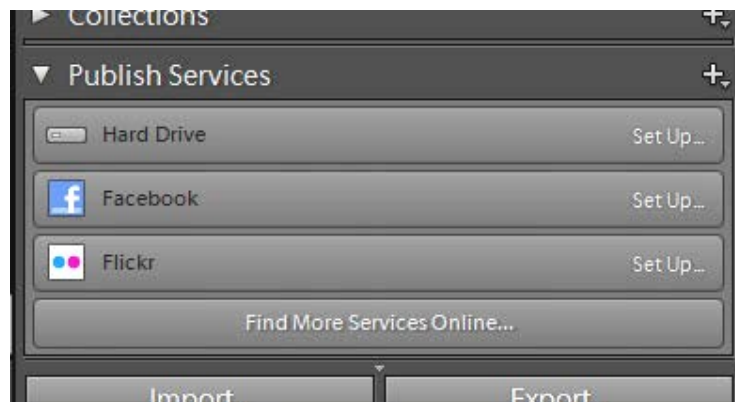


Fig. 6: Library mode - Output to Social Media

However, there are jobs that are beyond Lightroom's ability (so far), and must be exported to other media.

Export: For free-standing slide show applications, use Lightroom's export menu. Right click on a selection, or a series of selections, click on **Export**, and follow steps in the **Export** menu for the specifications you need. Use the list below as a guide to those settings.

- **Slide shows:** fit image 1280x1024 at 96dpi, save as jpeg.
- **Web site:** use Lightroom's **Web** mode.
- **Blog:** Photoshop **Action**—fit image 800x600 at 72dpi, save as jpeg quality to 8.
- **Emails:** Same formula as for slide shows, but lower jpeg quality to 8 or lower.
- **Contest entrees:** Custom batch for each contest. Often 1,000 pixels on longest dimension.
- **Large Color Lab Prints:** In Photoshop, flatten and save as full-sized tiff. For mural prints—enlarge using **Onone's Genuine Fractals**.

