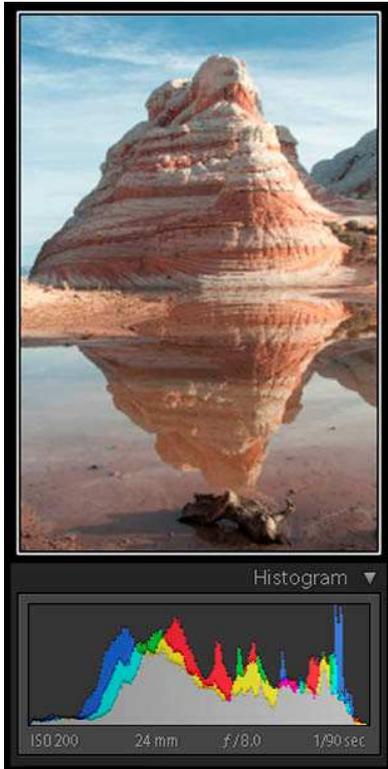


## Hidden Gotcha's in Raw Images

*In today's digital 'darkroom' world, a raw file contains all captured data. But, it needs processing. We adopt the word Post to represent all steps of taking a raw image through the digital darkroom to become a fine art composition. Let's work through the sequence important post-processing steps for you to become proficient at Post in Lightroom...*



Here's a single raw capture. It's relatively well composed. The histogram indicates a shutter speed 1/90 second, aperture f/8, and ISO 200 (native for Nikon D300).

There's no exposure clipping in this histogram. Clipping is what happens when shadows are 0 or highlights are 255. Zero means the image is completely black; 255 means it's completely white. In both cases, there's no subtle variation near perfect black or white.

And of course, it's just that subtle variation which adds tone and excitement to a fine art image.

So what *must* we do with this image to improve it - to evoke fine art awareness?

## Lightroom Catalog Workflow

Briefly, I want to recap how I work with images in Lightroom. First, I have an external 2 TB hard drive. On that hard drive, I have two folders; LightroomCentral and LightroomWorkups. I'm continuously working with both these folders in the Library module of Lightroom.

LightroomCentral contains Lightroom catalog, thumbnail previews, settings including copyright Preset (metadata), and most importantly, a Backups folder. I absolutely hate to spend an hour on something then not have a copy of it

Name	Date Modified	Size
Thumbs.db	5/13/2011 8:30 AM	5 KB
Lightroom.lrcat-journal	5/13/2011 8:22 AM	430 KB
Lightroom.lrcat	5/13/2011 8:22 AM	337,884 KB
Lightroom.lrcat.lock	5/13/2011 7:20 AM	1 KB
LightroomCentral.xls	1/17/2011 1:04 PM	21 KB
Temporary Import Data.db	12/14/2010 3:25 AM	40 KB
Temporary Import Data.db-journal	12/14/2010 3:24 AM	8 KB
SmartCollectionWorkflow.jpg	11/13/2010 10:30 PM	90 KB
workflow-smart-collections_aka_Lightroom.pdf	11/13/2010 9:35 PM	75 KB
Lightroom Previews.lrdata	5/13/2011 8:20 AM	
Backups	5/12/2011 8:24 AM	
Lightroom Settings	11/13/2010 8:19 PM	



Images @ G:\LightroomWorkups\2011\2011SnowCone-LR3

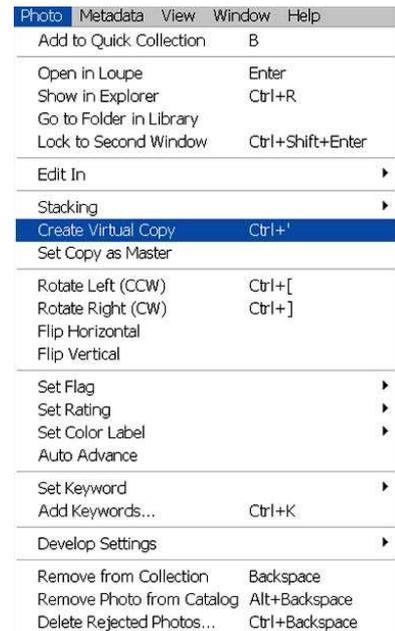
somewhere. Lightroom provides a backup capability every time you exit. I *strongly* suggest you use it!

My brain is wired to have a duplicate image in a central LightroomWorkups folder on an external hard drive during post processing. I use the convention Year, Month Day and Location, and Individual Image Name to keep up with my Post work.

### Virtual Copies

Lightroom has the facility to let me do one thing at a time. A virtual copy is similar to an adjustment layer in Photoshop. Any change you make on that virtual copy will be contained in Lightroom's database and show up in that version of your image in Post.

Macs and PCs approach Lightroom differently. On a Mac, you use the drop-down menus to smoothly process in Lightroom. Go to Photo> Create Virtual Copy; voilà, you have is a second (virtual) copy. On PC, you use keyboard shortcut Ctrl-' to get the same response.



### Post-processing Workflow a.k.a. Post in Lightroom



#### 200% Zoom Scan

This Lightroom image shows the Navigator. You activate it by clicking on the little triangle left of Navigator. A window opens showing you both your image and where you are on that image.

Take note of words Fit, Fill, 1:1, 2:1. These change image size of viewing workspace in Lightroom.

Because this image has a lot of light, I click the little up-and-down arrow on the right to choose 2:1 (200% zoom). On the Mac, you must click on each of those

settings. On PC, Ctrl+ or Ctrl- - changes image size up or down, respectively.

On the PC, if I click Page down button, I'll move down the column where the Navigator is initially set. When I get to the picture's bottom, the next page down

will take me back to the top of the next column (right). *This way, I scan the entire picture.* I carefully note any noise reduction, chromatic aberration, or blown highlights (BHL) in the image. We will talk about BHL in our last workshop session - Dodge and Burn in Lightroom.

On the Mac, to perform the same function, I must return to the navigator after examining the image. In the navigator, I move the cursor over window position square, then move to the next segment I want to investigate.

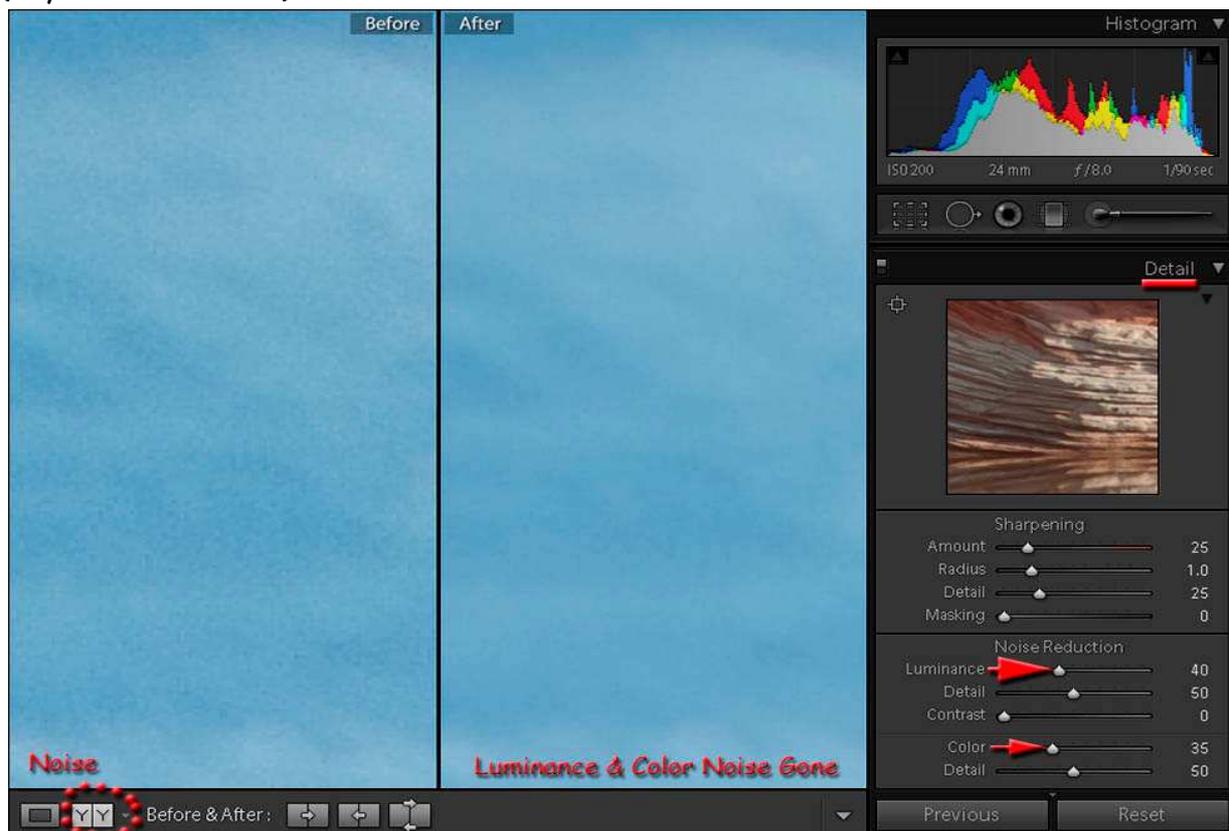
### Noise Reduction

On screen at 100% zoom, the upper left-hand corner of our image requires a skilled eye to note Noise. But at 300% zoom, after you've made the contrast stronger, it's really rather apparent.

#### Fixing Noise

It's time to begin Post in Develop module of Lightroom!

On the Mac, click on Develop in Lightroom's top panel. This selects Develop module and displays a histogram with a number of Post panels. On PC, hit D (keyboard shortcut).



Here's the meat of the problem...

On the left, you can see noise (speckles). On the right, you've chunked noise... a quintessential **GOTCHA!**

So, what's your right Post procedure?

The list of panels (and their functions) in Develop module is:

1. Basic - clipping, contrast, clarity, vibrance
2. Tone Curve - medium/strong contrast, TAT, shadows, darks, lights, and highlights.
3. HSL - hue, saturation, luminosity
4. Split Toning.
5. Detail - noise reduction (luminance; color); sharpening
6. Lens Correction - chromatic aberration, vignetting
7. Effects.
8. Camera Calibration.

For the moment, let's concentrate on Noise Reduction in Detail panel.

There are two types of noise; luminance and color.

Of these, Luminance noise causes most of the problems. If you're shooting HDR, - EV (darker) shots usually contain more noise than + (lighter). If you're shooting single images at Magic Hour - that hour around dawn and dusk - you're going to get lots of noise. Color noise is less obvious.

I usually repair Luminance noise first, then add a tad of color to help.

Here's where Lightroom engineers create a zone of enormous delight for shooters whose capture habits require noise elimination. As innocuous as it may appear, that little YY symbol (lower left corner - screen) is really quite important!

If you're working with virtual copies, when you tap YY, you get a Before and After screen. ***As you manipulate noise reduction slider controls for luminosity and color, you get to vividly see and compare effects these sliders have relative to the Before image!*** Man, that's way cool...!

You might ask, "Why not use Panels in order Lightroom set them up?"

Think about it... you know the phrase, "... **garbage** in; *garbage* out..."

Well, if you sharpen noise, don't you simply get more noise?

So, if you reduce noise, then sharpen, you just may have a smoother image...

*Tip: In Film Strip bottom panel, immediately beneath the image, Lightroom usually shows you the image name. For each virtual copy, it will show you that*

*image name with a / Copy n (where n is number for each sequential virtual copy). In effect, it stores those slider changes in the database. Lightroom also tells you just exactly what changes you made in the History column (Develop module).*

### Chromatic Aberration

Chromatic aberration deals with the situation where colors of light can not all be focused on the same plane (camera sensor).

If your lens does focus light at the sensor plane, but does so in a manner where the images formed are slightly different in size by color - Lightroom can help!

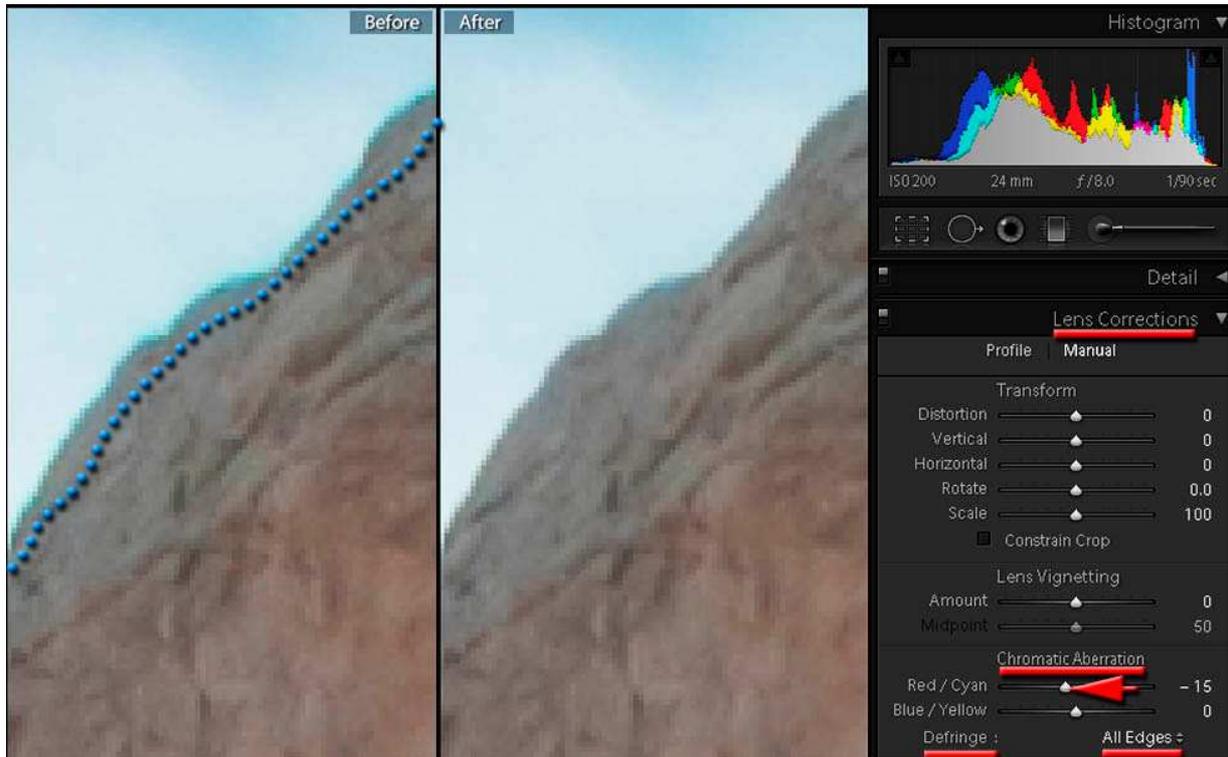
For example, the red channel may be larger than other channels. So, you'll see color fringing at corners of your images, particularly with wide-angle and zoom lenses. Even fixed focal length prime lenses suffer a slight degree of chromatic aberration. For best results, you *need* to address chromatic aberration.

Make your third virtual copy. Zoom to 300%. Scan the image until you find the mountaintop with one edge in shadow. Low and behold, right there, between sky and rock, you see a little blue line. Hey kiddo, that's chromatic aberration...



*Lens Correction Base Panel and Chromatic Aberration (CA)*

Chromatic aberration is very clear between sky and rock. You use Lens Correction Panel to choose how you Defringe and what color edges you affect.



Once again, that Before and After compare is incredibly helpful... here's a modified Lens Correction panel showing Red/Cyan slider motion (and result).

I suggest you really play with Red/Cyan and Blue/Yellow sliders. Take them to *each* extreme (+ or - 100). Evaluate the effect of each extreme. Then decide what you want your picture look like...

But, before you do...

Why don't you click the Defringe Off menu, open the drop down (little up-and-down arrow beside Off), and select All Edges.

Taking a little cyan out of Red/Cyan slider (-15) did a very nice adjustment on that backside edge of the highest peak. Again, a Before and After compare really facilitated my getting that CA adjustment spot on!

## Conclusions

Even at zoomed scale, our first view of Snow Cone appeared to be OK. Noise and Chromatic Aberration are not at all obvious. And, that simple OEV capture shows neither shadows nor high light clipping.

Yet, digging deeper, that seemingly simple raw file had a number of hidden gotcha's which would seriously plague each future tone mapping step. Upon removal or correction, those gotcha's become 'appropriate' steps to better image tone mapping.

Now, *Imagine...*

You're doing a simple HDR capture of OEV, -2EV, and +2EV. Hidden 'neath each image hood are Noise, CA, and exposure clipping. For example, our OEV needed N and CA corrections. Let's talk about -2EV problems; it's going to have more obvious noise and some shadows may be clipped. AKA +2EV, less noise, but highlights are clipped.

Since most light is captured in the upper camera sensor area, we get ugly blown high lights... Or, your target has whitish reflective surfaces. Then, when you get to +2EV, some HDR programs do not adequately address BHL.

If you shoot an HDR panorama using a circular polarizer, you can shoot quite a contrast range from orientations normal to the axis of light emitted from the sun. As your image approaches the sun's direct light, I've seen panoramas with in excess of 0.5EV difference in exposure dodge and burn values required to tame BHL.

Those are some reasons why you hear me *rant* about BHL.

Hence, it really helps if you know how to locally eliminate blown high lights. We touch on that intriguing tone mapping dilemma in our last workshop - Dodge and Burn in LR3...

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