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Color Correction: Art Digitization

Class description:
In this course you will learn how correct color casts in digital images that have been photographed with a color checker card using the Adobe Photoshop application.

Prerequisite: Intro to Adobe Photoshop

Learning objectives:
1. Overview of color temperature, white balance and how they affect an image
2. Review histograms
3. Apply a curves adjustment layer to an image
4. Adjust RGB color values to match faithful color values
5. Apply the modified adjustment layer to a different image

**Color temperature and white balance:**
1. All light sources have a color temperature that varies from red to blue. Red is considered warm and blue is referred to as cold. Color temperature is measured in Kelvins (K).
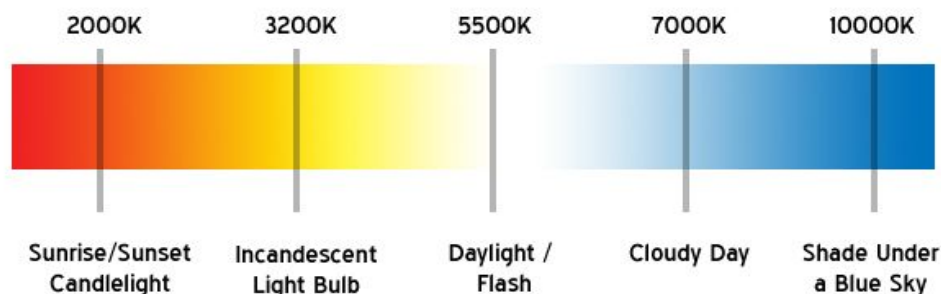
2. In photography, various light sources can cause what is called a color cast on the image. A color cast is an unwanted tint in the image.

3. White Balance in photography and post-production is the process of adjusting colors so the image is as faithful to real life as possible.
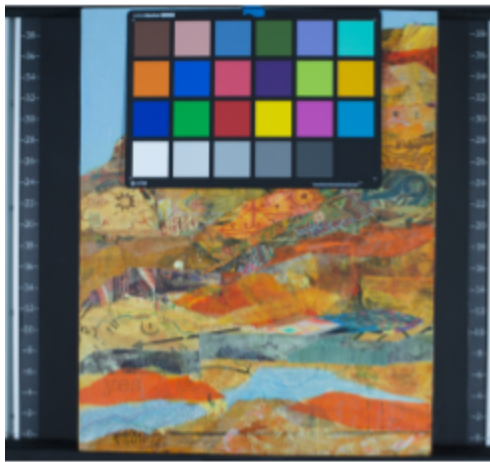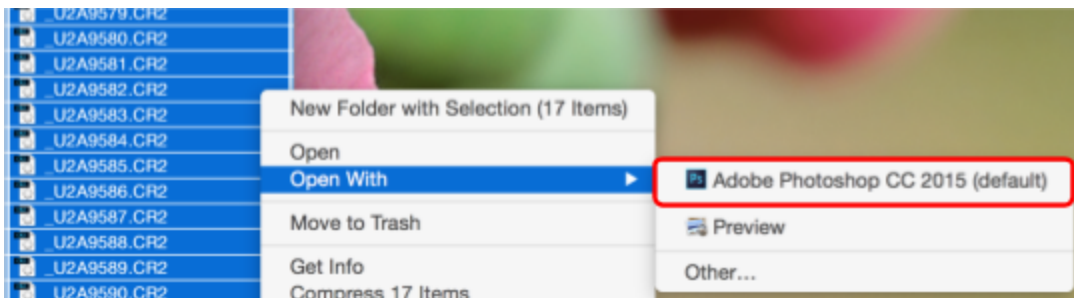

Blue color cast   Proper White Balance

Opening & evaluating images:

1. Select all raw images (command + A) and open them with Adobe Photoshop Camera Raw plugin. Canon Raw file extensions are CR2 files. These vary depending on the type camera.


2. Using the histogram, determine which photos have the best exposure. Histograms show the amount of tones of particular brightness found in the image.
   a. Histograms will look different from image to image.
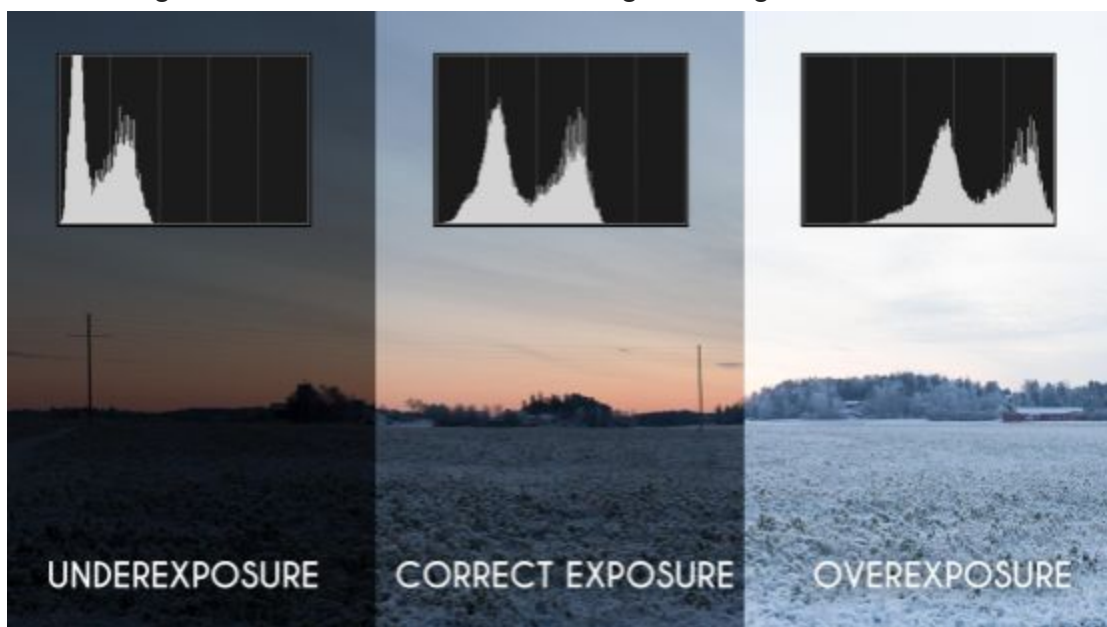
b. When evaluating a histogram we want to ensure there is no clipping in the image. Clipping is when either the highlights disappear off the right side of the histogram or the shadows extend beyond the left side of the histogram, either results in a loss of detail in the image.
c. Start by activating the clipping warnings in the upper corners of the histogram.

Warnings on   Warnings off
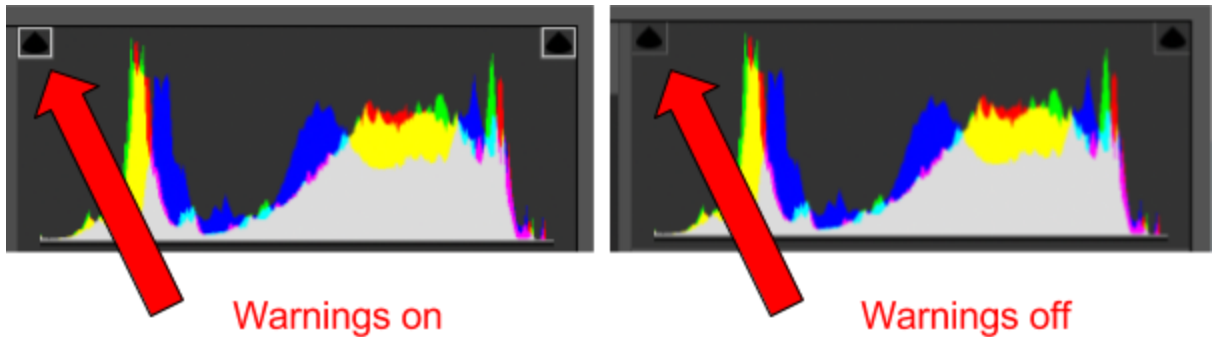
d. When the icon turns red (or white) that indicates clipping in the image.


Shadow clipping   Highlight clipping
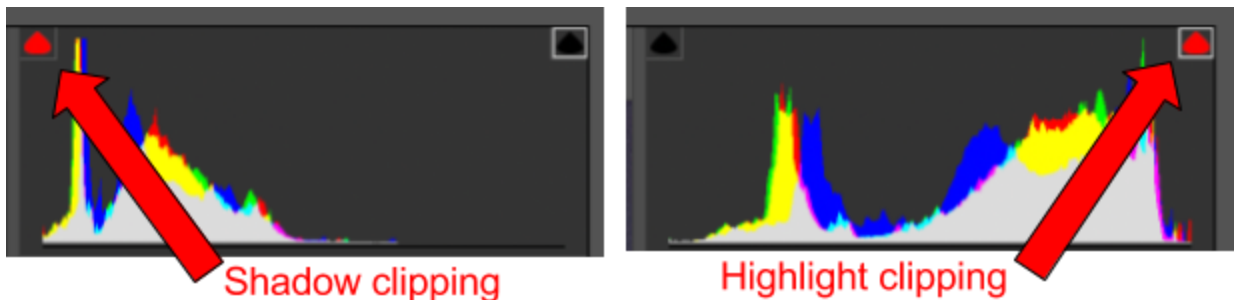
e. Once you find the set of images (one with the card and one without) make sure they were both taken with the same camera settings.


Camera Settings
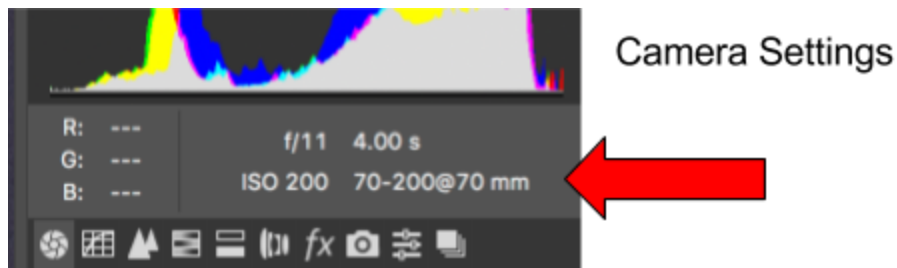
f. Select both images from the filmstrip on the left side of camera raw and click on open images in the bottom right corner of the software.
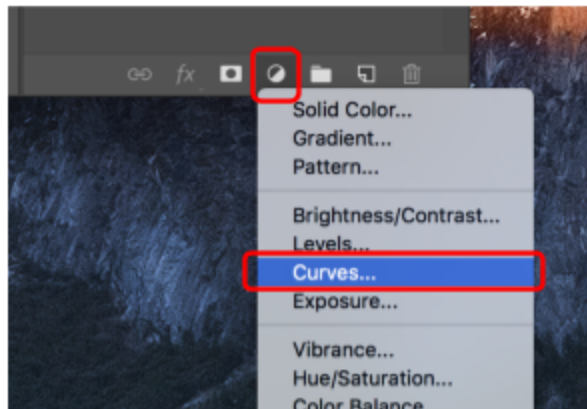
Curves adjustment layer:

Using the image with the color card (which is now open in Adobe Photoshop) create a curves adjustment layer.
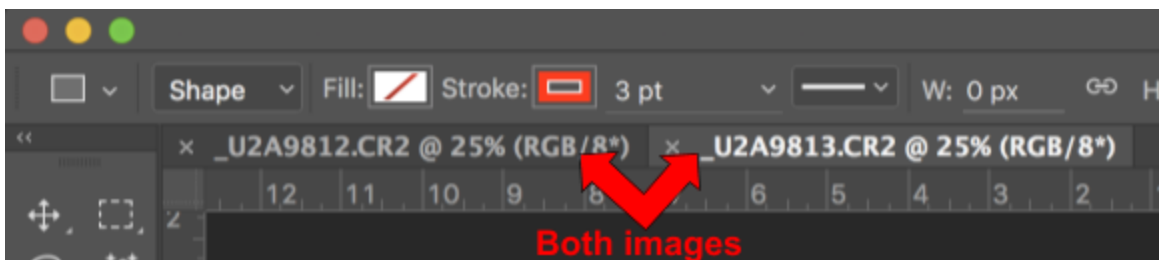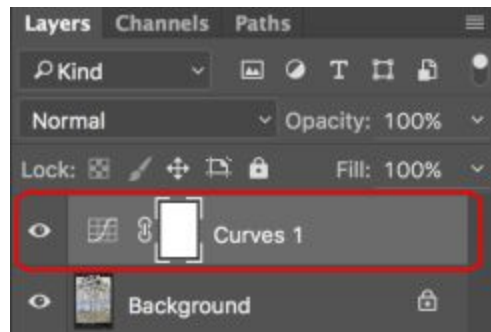
1. Navigate to the layers panel and either click on the adjustments tab and then click on the curves icon OR click on the adjustment icon and select Curves.
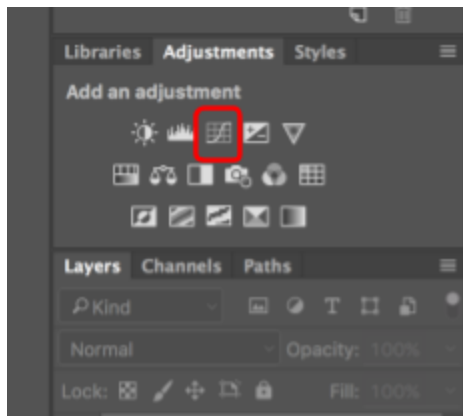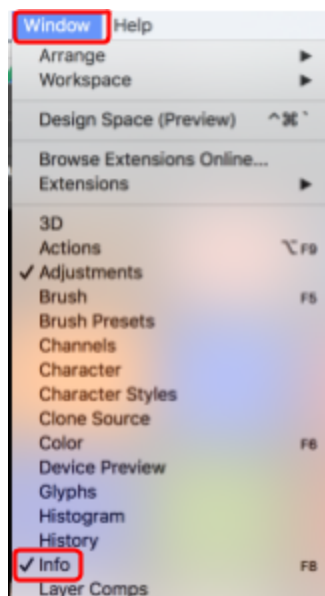

OR

2. Confirm there is a secondary layer in the layers panel titled "curves".

3. Click on the eyedropper icon from the tools panel. Hold shift down on the keyboard and click in each gray scale square (the bottom row) on the color card.

4. Open the info panel (if it isn't already open) by clicking on Window > Info

5. Click on the white eyedropper tool inside the curves adjustment properties then click on the white square on the color card. This is a white balance correction.
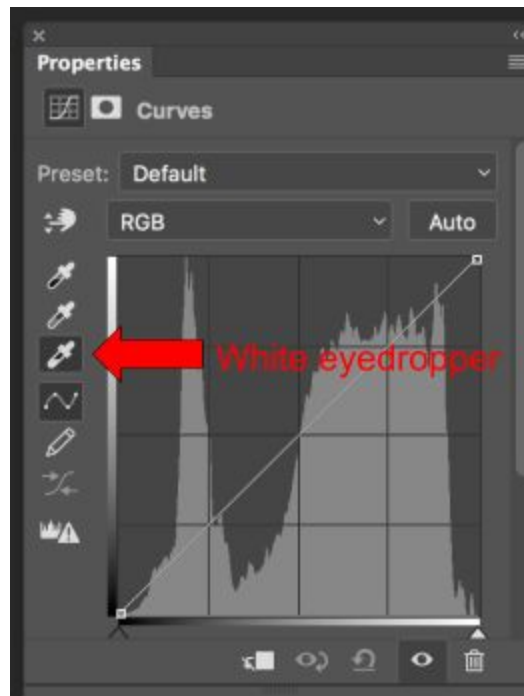

6. Using the info panel, evaluate your RGB values. The number in the left corner will correspond with each square we sampled on the color card. Our goal is to make these values faithful using the predefined color guide.

White		97.94	-0.96	2.26	2.46	113.02	249	249	244	249	249	244
Neutral 8		82.33	-0.60	0.26	0.65	156.30	203	204	203	203	204	203
Neutral 6.5		67.43	-0.71	0.24	0.75	160.98	162	163	162	162	163	162
Neutral 5		51.31	-0.10	0.20	0.23	115.93	121	121	121	121	121	121
Neutral 3.5		36.20	-0.59	-0.73	0.94	231.08	84	86	87	85	86	87
Black		20.44	0.12	-0.54	0.55	282.37	52	53	53	52	53	53

7. To adjust each RGB value, use the drop down menu to select the color channel you wish to adjust first. Keep in mind, you will frequently have to go back and forth between these channels.
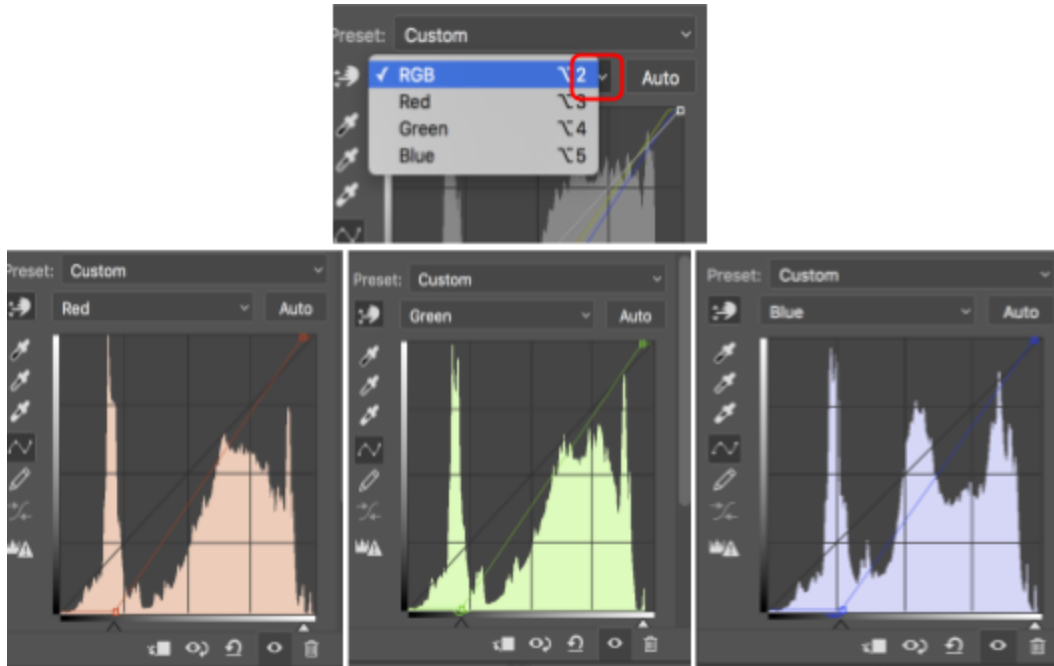
8. Click on the hand icon, move the mouse to the square you are correcting on the color card and either drag up to add more color or drag down to reduce the color. You will see the values in the info panel start to shift with your movement.
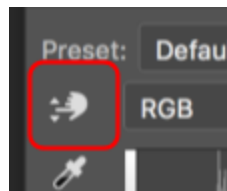
9. Once you have balanced all the color values, your info panel should look like the below image. This is a color corrected image.

10. Click on the curves layer from the layers panel and drag the layer to the image without the color card. This will apply the same adjustments to the image without the card.

11. Crop and save your work.