RESTORATION AND CORRECTIVE TOOLS
COLORIZING AND COLOR CORRECTION
We will learn how to use specific tools for fixing damaged photos, and adjusting their contrast. We will cover adjustment layers and blend modes for contrast and color control.

• RESTORATION: HOW MUCH DAMAGE?
A major factor before we get started is to determine what the end result needs to look like. There is a significant difference between removing scratches, and replacing a key point of detail, like a face. If the damaged point of detail is unique, and not found anywhere else in the image, we are going to have a much harder time fixing it. You are not going to take a brush tool and draw in someone’s missing face details, it won’t look natural. At best, if you had another undamaged image with the element you are looking for, you would try to composite it into the damaged one. That would also be contingent on composite situations, such as angle, lighting, detail, resolution. So it is not a simple fix. If there are abundant sources for similar detail, with a similar contrast, it will be an easier fix.

REALISTICALLY FIXABLE

NOT REALISTICALLY FIXABLE

• CLONE TOOL
The Clone Stamp is going to be our first tool for fixing scratches and tears. It works by “sampling” a user defined point of detail, then by using a brush, draws that detail in the new location. So if the detail you want isn’t in any picture, then you can’t clone it. In the fixable image, we can see that corners of background detail is torn or missing, there is plenty of similar detail around these locations to fill in the missing parts. That’s why the boy’s missing face isn’t realistically fixable if it is the only photo we have of these kids. We won’t be making “Frankenkid” by combining facial elements from the other kids in this image, into the boy’s face, even though technically it is possible. We are going to try to stay as “realistic” as possible with the single image we are working with for the project.

CLONE SOURCE PALETTE
As of CS4, there is a palette for defining multiple source points, and controlling other aspects of the clone stamp options. It is very important to “redefine” your source point as you move from location to location, or else the detail your source is cloning won’t match the destination in terms of texture, tone, and general believability. When cloning is done well, it should be unnoticeable by our intended audience.

It is very easy to reclone in a flaw from the source point to the destination point on accident. Here we see a small scratch or speck of dust repeated.

• HEALING BRUSH
• SPOT HEALING BRUSH
• PATCH TOOL
The healing brush, spot healing brush, and patch tools work similarly. Unlike the clone stamp, which is just putting existing pixels in a new location, the healing tools are smarter. They look at the texture, lighting, transparency, and shading of the source, and destination and make a combination that “blends” at the destination point. These tools are great for working on pictures of people.
ADJUSTMENT LAYERS
Adjustment layers are excellent ways of changing color and contrast without permanently altering our file. They can be modified or thrown out completely at any time. This makes them ideal, because we often don’t know exactly what we want the first time through an image, and it won’t punish us for experimenting. You can stack multiple adjustment layers on a single image. This way you can do specific adjustments, one for contrast and a separate one for color correction. It even works with selections, so you can adjust at object level within a photograph.

ADJUSTMENTS PALETTE
The Adjustments Palette displays the adjustment options for the current adjustment layer you are on in your layers palette. This allows us to change the current settings for the adjustment we chose. If you choose a different adjustment, the adjustment palette will change to its specific options. It is a lot like our Options Bar when we switch tools. When you master Photoshop, you will use “Curves” to make all of your color and contrast changes. Unfortunately, Curves is not as intuitive to beginning Photoshop users, and is considered a more advanced type of adjustment.

LEVELS
There are a variety of tools and adjustments that can make our images lighter or darker. We will start with a Levels Adjustment Layer. Its main controls are the 5 sliders. Each slider makes a specific type of contrast change. They always do the same thing, so once you memorize them, it will make adjusting contrast much easier. Below is a representation of the sliders, and their function.

PRE-DODGE & BURN TOOL NOTES
The Dodge & Burn tools work great for localized contrast adjustment. So if only part of an image needed to be lightened/darkened, we could use these tools. Since they are destructive to the background, we have to do a trick to make them work separate from the background, but still give the appearance that our images have contrast changes.

First choose “New Layer” either from the layer pull down menu, or the layers palette. Name the layer appropriately. I chose “Dodge & Burn Layer” but you can choose whatever descriptor you want. Next choose “Mode: Overlay” and check the box for “Fill with Overlay neutral color (50% gray). Click “OK”.

This layer is where we will be using our dodge & burn tools. Make sure not to use them on the Background Layer. It will permanently lighten/darken the pixels of our original image, and we don’t want that.

When we dodge & burn it will only effect this layer as long as you stay on it in the layers palette. You can see that the layer is selected on the layers palette. When you toggle its visibility on/off it will hide/show the contrast changes we make on the layer, composited over our background image.
DODGE TOOL
Dodge uses brushes to make objects appear lighter in contrast. A little goes a long way, it is very easy to make an object look washed out from over dodging it.

BURN TOOL
Burn uses brushes to make objects appear darker in contrast. Our eyes are generally more accepting of darker images than washed out ones, still make sure to use burning in moderation.

Both tools are controlled by the options bar settings. All of the settings here are very important to pay attention to. With each you choose a brush size, generally a large soft brush works in most cases. The "Range" is important to decide because this is the tonal area that the tool will most effect; shadows, midtones, highlights. The Exposure is the most important setting to pay attention to. The default is 50% but I find that is absolutely way too high to start with. I set my exposure at no more that 10%. Generally, by the time you see a tonal difference on screen, you have dramatically changed the contrast. Learning to control these tools takes time and patience. Get a feel for them, because they are very powerful ways of doing local contrast changes. Always use these tools on a "Dodge & Burn" Overlay, Neutral 50% layer.

IMAGE MODE
Image Mode is important for us to pay attention to before diving into color tools. You can only be in one Image Mode at a time. The modes are based on how the colors/channels of our image are handled. We will be working mostly with RGB for color images. If you are in graphic arts, you will work with CMYK for printing. If you have a black and white photo, it will be Grayscale. No colors are available in Grayscale, so if you want to color it, or do anything other that black/white/gray you will need to move over to RGB color mode. For most of our images, you will also want to stay in 8bit/channel, 16bit is overkill for most beginning projects. Photoshop will begin to gray out tools and pull down functions that aren't available in 16bit mode.

COLOR BALANCE
For color correction, we'll be starting with the "Color Balance" adjustment layer. It is great for learning how to understand color modes, and color theory. We are able to visually see how when we add a color, it removes its compliment (opposite color). Make sure to change tone to be able to remove all of a color cast. Color casts don't just happen in one tonal range. For difficult colors like orange, that are made up of several colors, you will need to use many sliders, and many tones.

COLORIZING A BLACK AND WHITE IMAGE
First make sure that you are in RGB color mode. Then choose “New Layer” either from the layer pull down menu, or the layers palette. Name the layer appropriately, I named mine “Colorize Layer”. Set the Mode to “Color”. Any color you draw on this layer will show up over the black and white image as color detail. If you don’t set its mode to Color, it will look like spray paint that covers up image detail. The blend mode is what makes it work with the photo. You will need to experiment with the right hues and saturation to make it look more realistic. Layer opacity can also be changed to blend the colors into the photo better. You can do all of your coloring on this one layer, or do a color layer for each color object. Make sure to name them if you decide to do multiple layers.
• **DESATURATING A COLOR PHOTO**
There are a few different ways to make a color image look like a black and white image. The easy way in Photoshop to desaturate is to:

In Image/Mode: Change from RGB to Grayscale Color Mode
In Image/Adjustments: choose Desaturate

**DON’T USE: RGB TO GRAYSCALE OR DESATURATE**
Although easy, these are both terrible ways to make a color image into a black and white photo. They are both permanent, and don’t give us any control on what various tones will be converted to. They are crude methods, so don’t use them, ever.

**BLACK AND WHITE ADJUSTMENT LAYER**
What we are going to use is the adjustments palette, and make a Black and White Adjustment layer. This will give us both versatility in how it treats the tones, as well as allowing us to edit or get rid of the adjustment at any point, and our original image is preserved underneath. This will also work with selections, so if you make a selection first, then choose the adjustment, it will make only your selection appear black and white.
Project 4: Restoration
Colorizing, Color Correction

PROJECT 4: RESTORATION, COLORIZING, OR COLOR CORRECTION
POINTS POSSIBLE: 15

WHAT YOU SHOULD LEARN
• The Following Non-Destructive Habits:
  Duplicating the Background layer before we get started on our editing, preserves an original copy
  Using Cloning, and Healing tools on separate layers allows us to preserve the original background image
  Using Adjustment Layers instead of Image/Adjustments allows us to non-destructively alter our image
  Using a Color Mode on a layer allows us to color brushes over an image without affecting its detail
  Using a Overlay Mode, with 50% Neutral Fill, layer will allow us to Dodge & Burn non-destructively

• Knowing the limitations of restoration: If the detail we’re trying to restore isn’t in the original image, how are we going to fix it?

• If you add the complimentary (opposite) color to an image with a color cast, it will remove it, ie; a Green color cast is neutralized by adding Magenta

• Understanding the difference between how the Clone Stamp, and the Healing Tools are applied

• Understanding how to change contrast with Levels adjustment layers, and the Dodge & Burn tools

• How to appropriately change a color image into a Black and White

• How to change color modes

TECH SPECS
RGB Color Mode
At least 2 layers in addition to Background
At least 1 adjustment layer adjustment layer
Save As .psd (Photoshop Document Format) NOT JPEG

DO NOT USE: Type Layers, Filters, Shape Layers, Layer Styles, Smudge Tool/Blur Tool/Sharpen Tool
DO NOT: Composite multiple images together

FOR PROJECT 4, YOU ONLY NEED TO DO ONE OF THE FOLLOWING THREE OPTIONS
PHOTO RESTORATION
COLOR CORRECTION
COLOR ALTERATION

However, this is a 15 point project and the work you do needs to be reflected in this project. Do not choose to do Photo Restoration to an image with 1 scratch and expect to get full points because you “fixed” the damage. Whichever option you choose needs to look dramatically different from the original by the time you are finished.

REGARDLESS OF WHAT OPTION YOU CHOOSE
Duplicate the background layer on your layers palette. This way we preserve our original before we begin to alter it. At the end, we will have a Before/After. This is a good way to see how much progress you’ve made, and any areas that need a bit more work.
**Project 4: Restoration**

**PHOTO RESTORATION**

**STEP 1**
Each technique we use is going to be isolated on its own layer. Make a layer for each of the tools you plan on using.

- **Clone Stamp**: Use for fixing tears and scratches
- **Healing Tools**: Good for skin tones and blemishes. Works with some scratches and tears.
- **Dodge & Burn**: Local contrast adjustment for faded parts of a photo, or darkly stained.

**STEP 2**
Use each layer/technique to begin fixing the damage in the photo. Pay very close attention to the layer you are on, and make sure to interact with the Options Bar for each tool before you use it. The option for Sampling: Current and Below, is good for making the clone or healing brushes make source points on the background, but keeps you on the current layer.

For Dodge & Burn tools, make sure to create the “New Layer” with the following settings; otherwise, if you work on the Background Layer, it will permanently change the contrast. Fix any fading, or darker spots on your image using these tools.

**STEP 3**
If your image needs it, make an adjustment layer for “Levels” to the contrast.

**EXAMPLE LAYERS**

**TIP**
Toggle layer visibility on/off to see your progress from the original.

**STEP 4**
When finished, go to the File/Save As drop down menu. Change the name to “lastname_project4_restoration.psd”. Change the format to Photoshop, and choose a place on your hard drive where you are going to save files to that you will upload via ftp to the class website. Click Save, and agree to any file format options such as Maximize Compatibility. Upload to FTP site.

**FOR FULL POINTS MAKE SURE TO…**
- Duplicate the Background Layer before you start the restoration
- Use layers so that you can isolate tool work separate of your image
- Correct all of the major cracks, tears, and damaged portions of the photo
- Fix any contrast issues either locally with dodge & burn, or on an adjustment layer for levels
- Meet all the tech specs, and avoid using the disallowed elements noted there, ie; filters, compositing multiple photos
- Upload “lastname_project4_restoration.psd” to your folder through the FTP client
COLOR CORRECTION

STEP 1

Make an adjustment layer for “Color Balance”. Diagnose the color cast, and begin by adding the compliment (opposite) color. Try using all “Tone” ranges for better results.

You can make more than one Color Balance Adjustment Layer if you need to solve the color issue one piece at a time.

**TIP**

A good way to tell if it is getting better is to find an object in the image that should be neutral, like a wall, or a tablecloth, and see how close you can dial it in to be the original color. If a grey wall is still greenish, or pinkish, you haven’t quite fixed it. Keep going until it is accurate to what the colors should have been.

STEP 2

If your image needs it, make an adjustment layer for “Levels” to the contrast. Often you’ll find that after fixing the color issue, there are separate contrast issues to address.

**EXAMPLE LAYERS**

STEP 3

Even though the focus of this option is to fix the color issues, don’t ignore any scratches or damage in the image. Use the steps and techniques on the Photo Restoration handout to fix any damage that is left after color correcting.

**TIP**

Toggle layer visibility on/off to see your progress from the original.

STEP 4

When finished, go to the File/Save As drop down menu. Change the name to “lastname_project4_color_cor.psd”. Leave the format as Photoshop, and choose a place on your hard drive where you are going to save files to that you will upload via ftp to the class website. Click Save, and agree to any file format options such as Maximize Compatibility. Upload to FTP site.

FOR FULL POINTS MAKE SURE TO...

- Duplicate the Background Layer before you start the coloration
- Correct the major color cast in the image. Are neutrals neutral?
- Use layers so that you can isolate tool work separate of your image
- Correct the major cracks, tears, and damaged portions of the photo in addition to the color work
- Fix any contrast issues either locally with dodge & burn, or on an adjustment layer for levels
- Meet all the tech specs, and avoid using the disallowed elements noted there, ie; filters, compositing multiple photos
- Upload “lastname_project4_color_cor.psd” to your folder through the FTP client
COLOR ALTERATION

FIRST

Decide if you are going to

A: COLORIZE A BLACK AND WHITE PHOTO

B: DESATURATE PART OF A COLOR IMAGE

This will help in narrowing down your objective, and you can begin to work specifically with the types of adjustments you need for that particular choice.

A. STEP 1: COLORIZING A BLACK AND WHITE PHOTO

If your are going to colorize a Black and White photo, make sure it is in RGB Color Mode, otherwise you won’t be able to work with any colors.

A. STEP 2: COLORIZING A BLACK AND WHITE PHOTO

Choose “New Layer” either from the layer pull down menu, or the layers palette. Set the Mode to “Color”. Any color you draw on this layer will show up over the black and white image as color detail. If you don’t set its mode to Color, it will look like spray paint that covers up image detail. The blend mode is what makes it work with the photo. You will need to experiment with the right hues and saturation to make it look more realistic. Layer opacity can also be changed to blend the colors into the photo better. You can do all of your coloring on this one layer, or do a color layer for each color object as shown in the example to the left. Make sure to name them if you decide to use multiple color object layers.

B. STEP 1: DESATURATING PART OF A COLOR IMAGE

If you have a selection first, then make a Black and White Adjustment Layer, it will make just the selection appear black and white, the rest will remain in color. We can adjust it at any point, and our original image is preserved underneath. If you don’t have a selection, it will make the entire image appear as black and white.

TIPS

If you make a selection of an object then inverse it, before making the adjustment layer, it will make the opposite elements appear desaturated. Toggle layer visibility on/off to see your progress from the original.

BOTH

When finished, go to the File/Save As drop down menu. Change the name to “lastname_project4_color_alt.psd”. Leave the format as Photoshop, and choose a place on your hard drive where you are going to save files to that you will upload via ftp to the class website. Click Save, and agree to any file format options such as Maximize Compatibility. Upload to FTP site.

FOR FULL POINTS MAKE SURE TO...

- Upload “lastname_project4_color_alt.psd” to your folder through the FTP client
- Duplicate the Background Layer before you start the coloration or desaturation
- Use layers so that you can isolate color objects separate of your background image
- Use the “Color” blend mode to make the colors appear as part of the photo

OR

- Use the “Black and White” adjustment layer to desaturate elements of the image
- Fix any contrast issues either locally with dodge & burn, or on an adjustment layer for levels
- Meet all the tech specs, and avoid using the disallowed elements noted there, ie; filters, compositing multiple photos