

Photoshop

for

Photographers

by

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Introduction

This class is for people with some photography experience who want to be able to make the most of their photographs on the computer.

It is based on Adobe Photoshop, the leading image manipulation software, although many of the techniques taught will translate to other image software.

First, we need to deal with the Canby High School computer network. You need to follow these steps:

- 1) Go to the **Apple Menu** in the top left corner of your screen.
- 2) Pick **Chooser**.
- 3) In the Chooser, find **CHS Student Documents**.
- 4) Press **Okay**.
- 5) Fill in login name with **communed**.
- 6) Fill in password with **photoart**.
- 7) An icon called **Users** should appear on your desktop.
- 8) Close the Chooser.
- 9) Open the **Users** icon, and within it, open **communed** and then **Documents**.
- 10) Make a new folder in "Documents"
- 11) Name the new folder with your name: "**Last, First**".
This is now your work area where you can save your work from week to week.

Now you need to set up your working environment, which is Photoshop plus Internet Explorer:

1) Open the hard drive; look for and open a folder called **Applications**.

2) Within Applications, open **Adobe Photoshop**.

3) After Photoshop opens, click on the Applications folder window to bring it to the front.

4) Now open **Microsoft Internet Explorer**.

5) In the URL window, type “**www.bytesmiths.com**”.

6) When that page opens, look at the column of links on the left side. Click on “**Class Stuff**”.

7) When the next page opens, click on “**Digital Photography, beginning 17 January, 2001**”.

8) This page contains an outline of what we’ll be doing in the first few classes. It is in reverse-order, so scroll to the bottom.

9) You’ll be using this page often; you may want to bookmark it!

Keep in mind that this is a shared computing environment. Some of these instructions may have changed since the last time I tested them, and various folders may be moved or renamed!

In particular, if you can’t find Photoshop or Explorer, look on your desktop — the students may have moved them!

Image Theory

- **pixel**
the smallest component of an image that can be displayed on a computer monitor.
- **RGB**
a color model, based on the display of the transmissive color primaries, red, green, and blue.
- **CMYK**
the color model most often used for printing, based on reflective color primaries, cyan, magenta, and yellow. Black is added to make up for a lack of inks to produce black out of 100% CMY.
- **raster**
an image formed of rows and columns of pixels.
- **TIFF**
Tagged Image File Format, the format most often used to move high quality images between different programs.
- **JPEG**
Joint Photographers' Expert Group: a standard for image compression that is used in numerous file formats.
- **JFIF**
JPEG File Interchange Format, the primary file format used for JPEG-encoded image data.
- **EXIF**
Another JPEG file format, commonly used in digital cameras, that records camera data, such as shutter speed, aperture, etc. along with the image data.
- **selection**
a portion of an image upon which further actions take effect
- **partial selection**
a pixel is not necessarily fully selected or deselected, it can be (for example) 50% selected, in which case further actions will only partially effect it.

- **mask**
a selection that has been saved as a channel.
- **channel**
a gray-scale image. Color images are composed of multiple channels representing RGB, CMYK, or other color model data.
- **feather**
to cause a “hard-edged” selection to be partially selected around its border.
- **dimensions**
the area of an image, expressed in pixels per row and pixels per column, like “1280x1024”.
- **resolution**
how closely pixels are spaced together, either from an input device (scanner) or to an output device (printer). Pixels are inherently dimensionless; an image only has a “resolution” when it is input or output.

Sizing

At some point, you will have to re-size an image for some purpose.

Ideally, you should acquire an image at the size you need it for your purpose. For example:

- **Icons & Thumbnails**

are tiny images that are used to represent other things, and are typically 32 to 128 pixels wide.

- **Partial-screen use**

an image that will take up part of a computer screen, such as a website image or an email image. These should generally be 200 to 400 pixels wide.

- **Full-screen use**

an image intended to take up most of the screen, such as for a kiosk or slide show. These will be sized to fit a particular monitor setting, typically 800x600, 1024x768, or 1280x1024

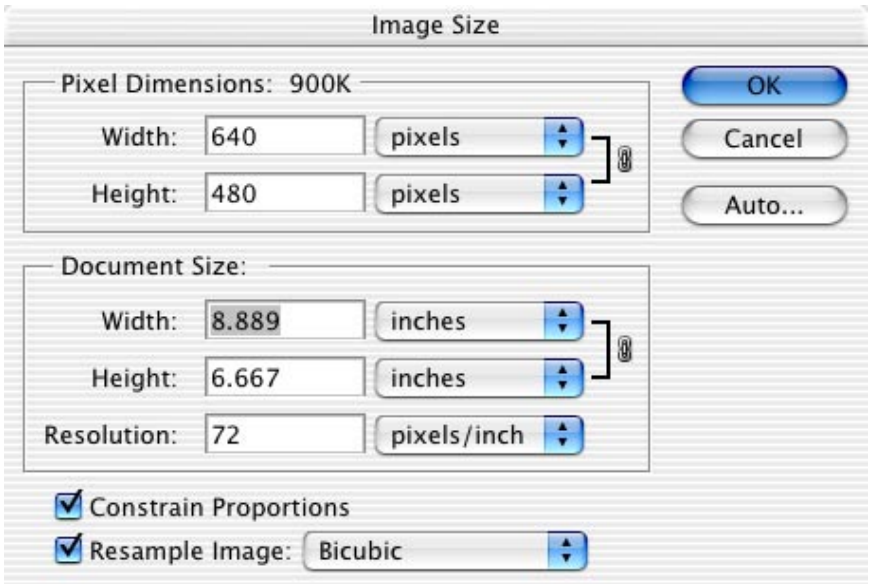
- **“Snapshot” prints**

these “magazine quality” prints are typically viewed at arm’s length in an album, and need to be printed at about 150 dpi, which will require 750 pixels across for a 5” x 3” print.

- **“Fine Art” print**

these “photographic quality” prints may be viewed as close as six inches, and require about 300 dpi. They are often printed larger than snapshots, and may require 3600 pixels across for a 12” x 8” print.

If you may be using an image for multiple purposes, you need to acquire it with as many pixels as you’ll need for the most demanding purpose in mind, then re-size for other purposes as needed.



To re-size an image, use the Image → Image Size... menu item. For photographic images, be sure to keep “Constrain Proportions” checked, or your image will look stretched or compressed.

Without “Resample Image:” checked, you don’t really change the number of pixels; you can only suggest to your output device how far apart you want them.

For phographic purposes, select “Bicubic” for the interpolation method, or “Nearest Neighbor” for line art or non-phographic art made of solid colors.

Now you can simply type in a new width or height, in either pixels (“Pixel Dimensions:”), or in any number of units available via menus (“Document Size:”).

Making your image bigger this way is not likely to work well, particularly if you go much more than 10% or so bigger.

Selection

Perhaps the most pervasive and important skill one can develop for Photoshop is mastery over making selections.

Most people reach a learning plateau when they have figured out how to do global operations. They apply filters or adjustments to their entire image, and are often disappointed or frustrated with the result.

The next step is making painstakingly difficult, hand-drawn **manual selections**, in an attempt to gain more control over the application of filters or adjustments. You can go a long way with this, but it does get better!

In most cases, it is worthwhile to make **contextual selections**, in which some data in the image is used to make the selection.

The simplest contextual selection is the “magic wand” tool. It selects areas of similar color automatically.

But more powerful is the notion of **partial selections**, which define areas in which a filter or adjustment has just a partial effect. (The opposite is a **hard selection**.)

Here is a summary of different selection techniques:

- **Marquee Tools**

manual selection of geometric areas, such as rectangles or ellipses

- **Lasso Tools**

manual or contextual selection of an arbitrary area, by drawing an outline, by marking polygon vertices, or by following a color change

- **Crop Tool**

manual re-sizing of an image by selecting a rectangular area

- **Magic Wand Tool**

contextual selections based on color, contiguous, or non-contiguous. Can be fine-tuned via “how close” parameter.

- **Quick Mask Mode**

manual selection that you “paint.” With different gray values, or with soft-edged brushes, can do partial selections.

- **CMD–OPT–~ (Mac) or CTL–ALT–~ (Windows)**

contextual, partial selection equal to the brightness of the image — like a traditional darkroom “contrast mask”

A single selection rarely is enough! You combine an existing selection with a new selection using “selection modifiers:”

- **Shift**

add a new selection to the existing selection

- **OPT (Mac) or ALT (Windows)**

remove a new selection from the existing selection

- **CMD (Mac) or CTL (Windows)**

cut the selection out of the image and drag it to a new location

Finally, the Selection menu allows you to do other operations on selections:

- **Invert**

contextual: deselect everything that is selected, while selecting everything that is not selected

- **Color Range**

contextual selection based upon the color or brightness of areas of the image

- **Feather**

turns a hard selection into a partial selection, or further softens a partial selection

- **Modify**

make an existing selection bigger or smaller

- **Trasform**

manually modify an existing selection by dragging its edges

- **Save, Load**

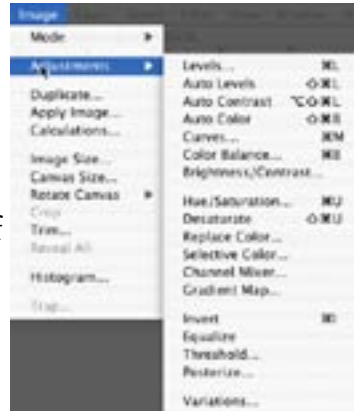
turn selections into channels, or channels into selections

Adjustments

Perhaps the most common changes a photographer will apply to an image fall in the broad range of **tonal controls**, which are all found under the **Adjustments** menu.

These enable you to “punch up” a dull, lifeless image, creatively add interest by making an image “unreal” looking, or even salvage a bad image that you thought you’d have to simply toss.

We’re going to focus on tonal controls, which all do the same thing via different interfaces and controls: they allow you to adjust the spread of image data, from dark to light, either for all colors all at once, or for specific channels.

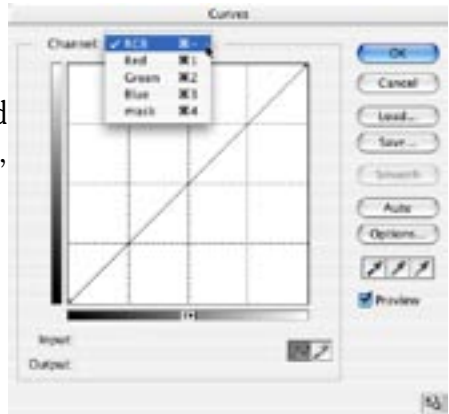


- **Levels...**
adjust white, black, and midpoint with a visual histogram.
- **Curves...**
adjust an arbitrary number of points from black to white, using a graphical control.
- **Color Balance...**
channel-centric adjustments for varying the relationships between the different color channels.
- **Brightness/Contrast...**
like levels, but brightness affects endpoints, and contrast affects the midpoint.
- **Hue/Saturation...**
allows changes using the HLS color model.

Although these adjustments all do similar things, it is important to choose the right one to avoid disappointing results.

We will be working primarily with the **Curves...** adjustment, using its actions as a model for understanding the other adjustments.

When opened, the curves will allow you to affect selected channels only. In this example, I have a “mask” channel selected, as well as the normally selected color channels.



The graph represents “before” values from black to white on the horizontal axis, and similar “after” data on the vertical axis. The default curve is a “linear ramp”, in other words, a 1:1 relationship.

Grabbing the curve anywhere will establish an adjustment point, and moving that point will affect how “before” levels of black to white get transformed to “after” levels. With multiple control points, you can have precise control.

Worth special mention are the various **Auto** controls:

- **Auto Levels**

adjusts the end points of each color channel separately, so that each channel covers from black to white. This increases contrast and may correct color casts in images that have good black and white points; it will DESTROY images (like sunsets) that do not have black/white points!

- **Auto Contrast**

adjusts the end points of all color channels together by the same amount, so that at least one of them is fully black, and at least one of them is fully white. This improves contrast without introducing color shifts.

- **Auto Color**

adjusts the gamma, or shape of the curve, for each channel separately so they average out to neutral gray. This may correct color casts without changing contrast, but it will remove color from images that are supposed to have a color cast, such as sunsets.

Masking

A mask is a channel is a selection — sort of, with subtle differences:

- **mask**

like a stencil or template, a mask defines an area of an image upon which filters and adjustments take effect.

- **channel**

a place where masks or selections are stored.

- **selection**

a mask or channel that is currently being used to define the area of an image upon which filters and adjustments take effect. A selection is indicated by a “marching ants” line superimposed on the image.

These three differ only in their context of use. Any of these can be simply converted to any other form.

The biggest difference between a mask and a selection is that a mask is used in a more automated way. Masks are often associated with **layers** to apply dynamic adjustments to portions of an image, whereas selections are always used by the end-user to manually apply some filter or adjustment to a portion of an image.

For example, if you make a selection, then define an adjustment layer, that layer will be associated with the selection as a layer mask, and the adjustment will only take place as though it were applied through the selection.



The value of this approach is that with a selection and adjustment, the change you made is unchangeable — you can undo it and re-do it with a different selection or adjustment settings, but that gets tedious rapidly!

With an adjustment layer, you can go back and change the settings of the adjustment, and you can edit the mask to change the selection upon which the adjustment takes place.

Masks have innumerable uses:

- **exposure adjustment**

make the sky dimmer without darkening the foreground, or make a face brighter without lightening the background.

- **contrast control**

use a “contrast mask” to primarily affect highlights or shadows. Edit the contrast of the mask itself to give more or less weight to highlights or shadows.

- **frames and vignettes**

create interesting framing effects — either geometric, or free-form. Paint the edges for a funky, distressed look!

- **panorama stitching**

combine two images with a layer mask so that you can choose how much of each image to show at any given point throughout their overlapping area.

- **montage**

combine different images, blending them into each other in creative ways.

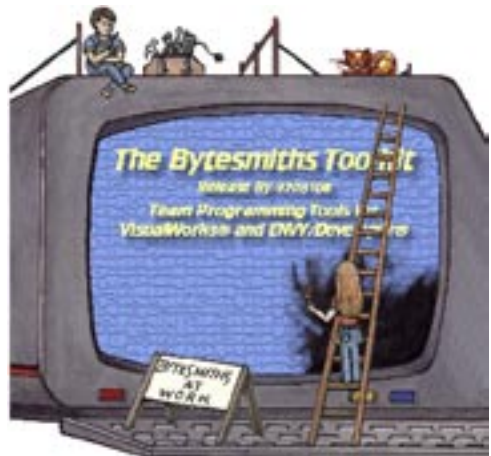
- **text effects**

select your text, make it a layer mask, and use it to “punch out” one image into another in the shape of the text — but one example of using text outlines as a mask.

- **color effects**

duplicate one of the color channels and use it as a mask for filters.

Here’s an example of a CD cover I did, using numerous layers and masks:



Filters

Filters are special effects that are applied to a selection of an image. There is a thriving third-party market for filters, and you can get some unbelievable effects.

We're going to concentrate on the filters of most interest to photographers.

- **Blur → Gaussian Blur...**

*Of the numerous blur filters, the most useful is Gaussian Blur, because it can be “tuned” via the **radius** parameter.*

- **Sharpen → Unsharp Mask...**

Of the numerous sharpen filters, the most useful is Unsharp Mask, because it can be “tuned” via three parameters.

- **Distort → Pinch...**

can be used to correct barrell or pincushion distortion, in which straight lines near an image's edge appear curved.

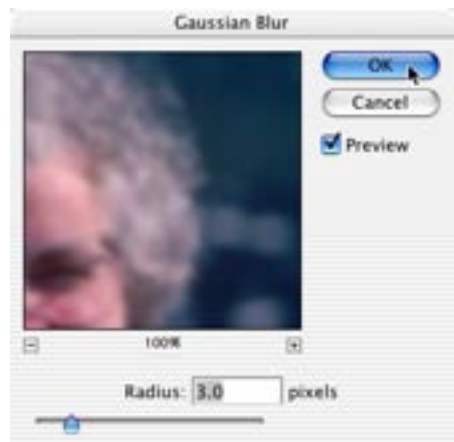
- **Noise → Add Noise...**

can make touched-up portions of images appear more realistic, by simulating film grain or digital camera noise.

- **Noise → Dust and Scratches...**

helpful for removing things the scanner picked up that you don't want in your image.

The **Gaussian Blur** filter at first seems non-useful to photographers. After all, you want the sharpest image possible, right? But it can be useful with a selection to reduce the distraction of a busy background, or for blending the edges of multiple images in a montage.



Unsharp Mask sounds

like an oxymoron. Why is something called “unsharp” under
13 Photoshop for Photographers Filters

the “Sharpen” menu? However, it is named for the dark-room technique it emulates.

Unsharp Mask takes three parameters:

- **Amount**

determines the overall degree of sharpening that is applied.

- **Radius**

determines the number of surrounding pixels that are involved in the sharpening affect.

- **Threshold**

determines the minimum difference in color levels that must exist before the effect is applied. This is often used to avoid sharpening film grain or digital cameras noise, for example.



The degree to which you sharpen depends on the content of the image, the viewing size of the final image, and personal preference. A good starting point for experimentation might be amount: 150-200, radius: 0.8-1.5, threshold: 0-15.



I lump the **Clone Tool** together with filters. It allows you to copy brush-sized areas from one place to another by painting.

You start with the Clone Tool by holding down the **option (alt)** key and clicking on a source point. Now as you draw, pixels from the source are copied. You can hold down the **shift** key and click to copy pixels in a straight line.

The Clone Tool is used for removing dust and scratches from scans in a more precise manner than the automated filter. It can also be used to easily remove objects from an image, or to take wrinkles out of faces, etc.

Layers

Whenever you combine images from different sources, you are using layers. When you paste or drag one image onto another, it creates a layer “on top” of the original image.

All layers except for the bottom can have a transparent region, which allows lower layers to “show through” for viewing. (If you want the lowest layer, called *Background*, to have transparency, you must copy it into a new layer, then clear the Background layer.)

The Layers palette is the key to using layers:

- **right menu**

*allows you to perform a variety of layer operations, many of which can also be accomplished via contextual menu, global **Layer** menu, or the icons at the bottom of the palette.*

- **top menu**

is the blending mode menu. “Normal” overlays lower layers, other blending modes let you combine layers in various ways. The “Opacity” figure also allows layers to blend that would otherwise not, such as “Normal.”

- **“Lock:” area**

allows you to lock transparent and or non-transparent areas, or to lock a layer’s position.

- **first column**

indicates visibility. Click on the “eye” icon to make a layer invisible, or click in the empty square of an invisible layer to make it visible.

- **second column**

indicates layer mode. A paintbrush indicates the current layer upon which edits apply. A chain indicates two layers are linked. A mask indicates that edits apply to a layer mask, instead of the layer itself.



- **third column**

has the icon and name of the layer, along with extra icons for layer masks and/or layer effects.

- **bottom icons**

*allow you to add layer effects, layer mask, layer set, adjustment layer, new layer, or delete the layer. (These can also be accomplished via the right menu, contextual menu, or global **Layer** menu.)*

The third column is where you click to select a layer. Only one layer can be selected at a time, and it is the layer upon which editing occurs. There are many things going on in this column:

- **adjustment layer icons**

like the shown “Curves 1” adjustment layer icon, allow you to change previously set adjustments. These icons generally look similar to the dialog used in the adjustment layer, like the curves icon shown.

- **layer mask icons**

like the ones shown in the “Curves 1” and “Extract” layers, allow you to select what part of an image gets an adjustment or gets blended with a layer image.

- **layer sets**

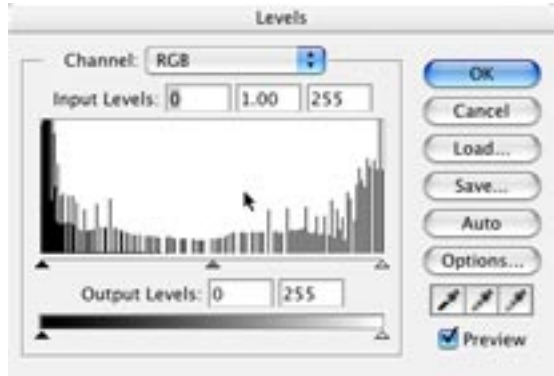
are simply ways of grouping layers together, so the entire layer set can be viewed or turned off with one click, or moved as a group within the layer stack.

- **layer effects**

are special effects that can be applied to layers, such as drop shadows, bevels, etc. These can be saved as “layer styles” and re-used.

Workflow

Photoshop operations should be applied in a particular sequence for optimal use. If you perform operations in the wrong order, damage may result to your image that may cause you to have to start over from the beginning. Such damage is apparent from a “spikey” or “comb-tooth” pattern in the levels histogram.



For optimal changes to an image:

1: re-size

*If your image will need to change size, do this first. If making it smaller, operations will be faster. If making it larger, more data will be preserved through subsequent edits. (If making the image larger, you may want to do a **small** amount of sharpening immediately afterward.)*

2: global corrections

If the entire image requires adjustment, do this first. For example, if the image is overall too dark, make it lighter before working on different parts of it.

3: 16 to 8 bit

If the image is in 16-bit color, change it to 8-bit color after performing global corrections.

4: rotation

Particularly if working with large images, waiting until after reduction to 8-bit color will result in a faster rotation.

5: selective corrections

If you need to do selective changes, you do it after global changes.

6: touch-up

The clone tool is easier to use if done after all tonal corrections are complete.

7: save for re-editing

If the image will be re-edited, it should be saved with layers and masks before the next step.

8: flattening

If multiple layers are used, flattening is the second-to-last thing to do before saving in the required final format. This is necessary for images that will be used for other purposes, but may not be necessary for images that will be used by other Adobe applications.

9: sharpening

Sharpening is specific to the output size, and should generally be the last thing you do before saving in the final format. Sharpen while viewing the image at the size it will eventually be used at: for screen use, sharpen at 100%; for print use, sharpen at a zoom level that makes an image on the screen that is the same size as the print you will be making.

10: format conversion

If your final image is going to a printer, save as a TIFF file. If going to screen (email, web, or local screen viewing), save as a JPEG file. If you might want to re-edit, be sure to save to a different name than the original!

Obviously, this workflow makes certain assumptions, and there are many cases in which some other workflow will produce acceptable results, but keeping these general guidelines in mind will generally result in more predictable results and less wasted time.