

Lab 4
Due February 22

Images and drawing using photoshop, illustrator, and composer

Results:

- Word document with answers to 1 a-f
- A copy of the Photoshop filtered image.
- A copy of the Illustrator cross-section and image.
- A copy of the Canvas subduction zone.
- A copy of the image of your web-page on rohan.

Hand a hardcopy of the above in a single neat document that includes the URL of your web-page.

In this lab we will learn how to adjust pixels, make drawings, and port it to a web page. All answer to questions in this lab should be saved in a word document, along with copies of the Sheep Mountain images and a copy of the image and your cross-section.

Photoshop is designed primarily to handle bitmaps and raster images; Illustrator and Canvas are better at vector drawings. However, both are versatile enough to do a little of both. We will also try Netscape composer.

Part A. Bitmap manipulation.

Photoshop.

Download the Sheep Mountain aerial photo from the web-page and load into Adobe Photoshop.

a) Using the mouse and the left button, draw a dashed rectangle that shows the selected area. Crop the image (*image, crop*) slightly (i.e. cut away a small amount of the margins. The Crystal Creek anticline and main Sheep Mountain anticline should still be visible). Note the undo command (under edit), which can be useful. Also the *rotate canvas* command if image is upside down.

b) Display the histogram (*image, histogram*). What does the histogram show? What is the most common pixel value (peak of the histogram)?

c) Now invert the image (*image, adjust, invert*). What has happened? If a pixel in the original image had a value of 255, what would it have in this image? What is the algorithm used to invert the pixels of the image? Try a histogram with the inverted image - what is the peak value? Undo the *invert* (under edit).

This is an important point - all the options available in this program can, at the most basic level, be expressed as simple equations that operate on the numbers in the image.

d) Try some of the options under *filter*. What does *blur* do? Undo the blur (*edit, undo*) *Sharpen* (and undo)? Which might make it easier to interpret (i.e., draw a geologic map) of the image?

e) Try *image, adjust, equalize*. Now look at the histogram. Is it peaked as much any more?

f) Filter the image to make it easier to interpret. Draw a line where the river is (using the drawing tool). Save a copy as a bmp file.

Part B Drawing.

Illustrator. Start up Adobe Illustrator. Do *File, new*. You should get a dashed rectangle (drawing area) inside another rectangle (size of paper). These can be adjusted if needed under *File page setup* and *File, Document setup*. We will make a rough geologic map using the aerial photograph. Remember to save the diagram frequently!

Download and insert the image of Sheep Mountain (*file, place*). Reduce the size of the image by 50% (*object, transform, scale*) and rotate so that it has the correct orientation, if needed. Identify the river on the image and draw a line using the pen tool and clicking along it. Make this line blue. Draw a line (3 pts and red) on top of the diagonal line already on the photo and label with A and A'. Identify at least 7 outcropping beds on the map and draw lines along the beds.

Now draw a box below the image. Note that the length of the cross-section line is about 46,000 ft and therefore can be used to estimate the scale of the aerial photo. In the box below the image, draw a cross-section. Begin with a flat line denoting the surface and the point at which the identified beds intersect the cross section. It should include at least 4 rock layers and an approximate scale. Color in between the layers using the paintbrush.

Go to the web-site <http://geopubs.wr.usgs.gov/open-file/of99-430/>. This is a USGS document with lots of useful symbols. Go to folds and click. This **should** open a PDF files with a bunch of fold symbols in it. At the top left corner is a link to a postscript file of the same symbols. Click and save this file (and remember the name) in some directory. Then open in Illustrator (in addition to your sheep mt picture). You should be able to copy symbols from one to another. Put the symbol for a double-plunging anticline over the hand-drawn one by Crystal Creek. Add other symbols as desired.

Save your picture and cross-section as an Illustrator file and copy to your lab write-up. Also, use *File, export* and save as bmp file to "sheep_xcross.bmp".

Canvas. Canvas is a similar program to Illustrator and is in the computer lab. Many of the features are the same but it also allows layers, which represent different overlays of a diagram. Go to the computer lab and make a labeled drawing of a subduction zone in Canvas.

Part C. Netscape composer.

We will now use Netscape composer to create a new web page. Start the Netscape browser (Navigator) and then go under window to start “composer”. A new window should appear. Go under insert, image. Under image location type the name of your favorite Sheep Mountain jpg image. Set dimensions to custom with a width of 300 pixels. Under appearance use a spacing of 200 pixels left and right and 100 pixels top and bottom. Write something in alternate text (this is what appears when you move the mouse over the image). Save the file as index.html. Start up another window of Netscape Navigator and go to file, open file and open your new index.html. Your new web-page should appear. Hit reload after saving a new copy (or use preview with composer).

Type in some text below the image. Then type in the words “cross-section”, highlight, and go to insert, link and add the sheep_xcross.bmp. Open another file in Netscape composer and type something else. Save this file as sheep2.html. Then add a link on the first page to the second page. Does it work in Navigator? (I hope so).

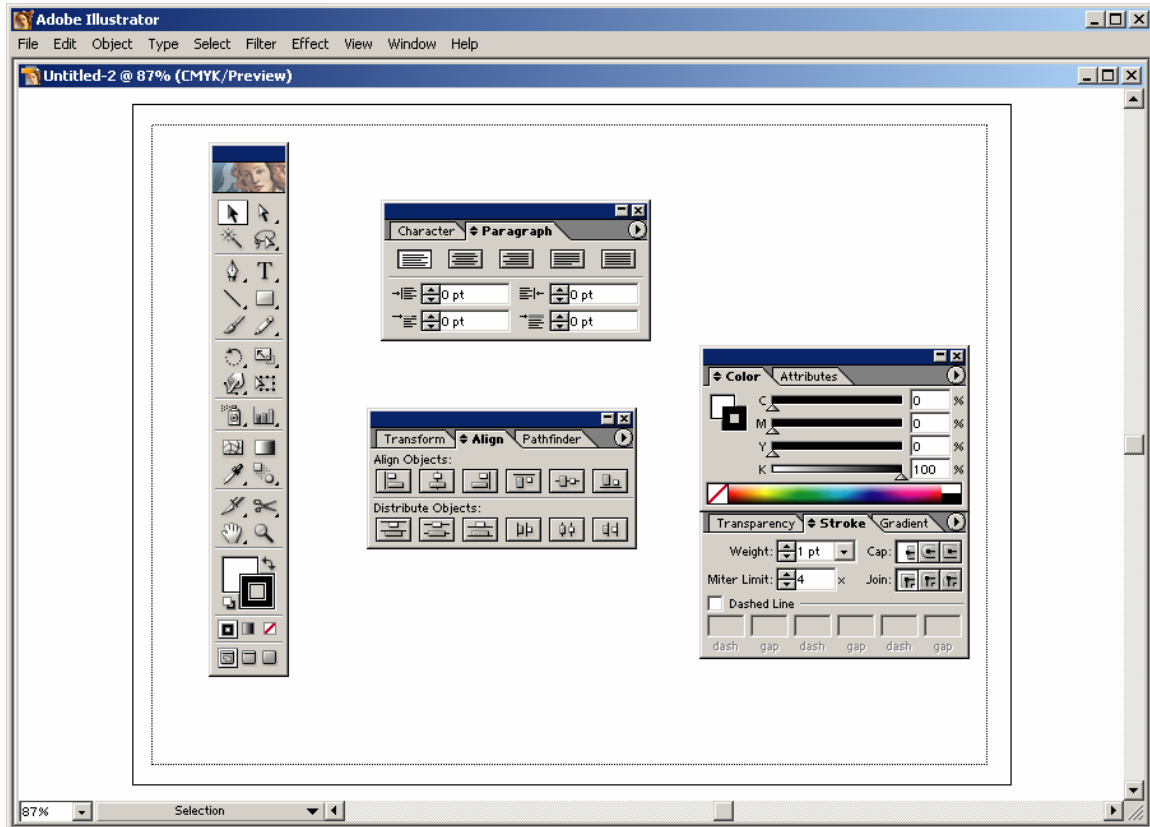
Finally, use view, HTML source to look at the actual source. It should look something like this:

```
<html>
<head>
  <title>Sheep Mountain</title>
  <meta http-equiv="content-type"
    content="text/html; charset=ISO-8859-1">
</head>
<body>
<br clear="all">
<hr width="100%" size="2">
<br>
This is a picture of Sheep Mountain.<br>
<a href="sheep.bmp">cross-section</a><br>
<br>
<a href="sheep2.html">Page 2</a><br>
<br>
</body>
</html>
```

Transfer the index.html, sheep2.html and associated images to the public_html directory on rohan. Hopefully your web-page should appear.

Notes. There is a program that does much the same as Photoshop named “gimp”, which is free. Download a copy to your home PC (or download to a CD here and install on your home PC) and try it. It doesn’t have quite as many features and tends to crash, but the price is right.

A quick Illustrator tutorial.



Illustrator is a drawing program. You should see a white "board" and a little box with icons at the left. The icons represent various ways to draw. The arrow is a pointer used to select, move stuff around, and resize.

Click on the "rectangle" icon (right, fourth from top). Now move the mouse to the board and it should appear as a small cross. Click the left mouse button and while holding down, drag the mouse slightly. A rectangle should appear. When you let up on the mouse button, the rectangle ends. Note that is small blue, indicating this object is active. The arrow box should be black. Click on the pointer (arrow) and the cursor should appear as an arrow and small blue squares appear. Now you can grab the squares and change the shape and size of the rectangle. Clicking elsewhere will make it inactive. Click on one line in the rectangle and it should become active again. By holding the left mouse button down, you should be able to move the object.

Draw another rectangle. Now select that line and go up to *edit, copy*. The go to *edit, paste*. Another line should appear. Now click on all the rectangles while holding the shift button. This should allow you to select all the lines at once. Go to *object, group*. A box appears. Now, when you click on one line, all lines will be selected as a group. You can move all the lines as a group. Go to *object, scale* and reduce the size of the object by 50%. Then go to *effects, rotate* and rotate it by 45 degrees.

Now ungroup the rectangles. Click on one rectangle and using stroke and weight in one of the floating boxes, change the weight to 3 pts. Click on the box within a box and then the color bar to change the color of the line (under color). Click on the box to set the fill within the rectangle and then one of the patterns in the swatch floating box. Now click on the lines that extend out from under the rectangle. Apply fill to another rectangle and then drag it to overlap the first one. Use *object*, *arrange*, *bring to front* to set which one overlaps.

Go to the pen icon and click. Click the mouse at various places on the board. Straight lines should be drawn in between. Double-click to make it stop. The squiggly line icon allows you to draw while holding the mouse button down. The pen draws curves in between clicks (and is a little tricky to get the hang of). Try it.

The T icon allows you to write text on the picture (which can be moved, scaled, rotated, grouped, etc). It is useful to first click on the T icon, then draw a rectangle using it, and then type in the text. This allows text boxes to be resized and automatically adjust lines. Try some of the other icons. Use help.