

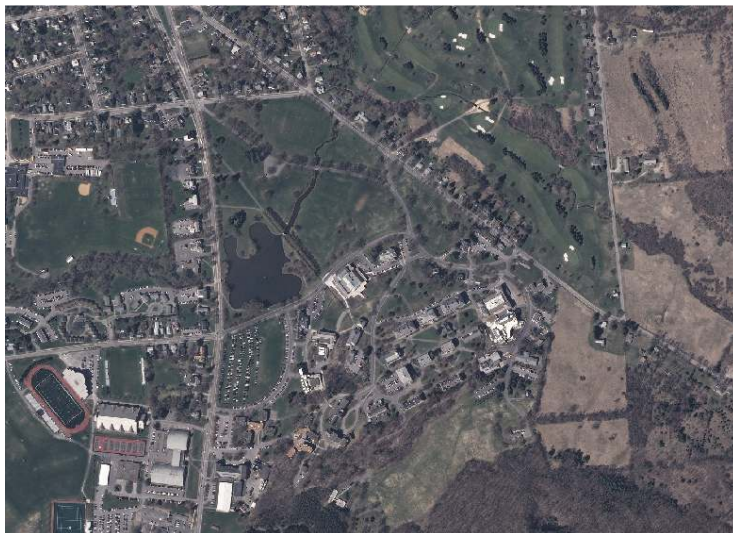
Exercise 5 – Heads-Up Digitizing: Colgate Land Cover in 1935 40 points

Introduction

Let's imagine that you have been hired by Colgate University to help on their "How have we changed over the years" project. One of the things that the university is examining is how campus land use and land cover have changed. Such an analysis typically involves locating old maps or air photos of a region and then digitizing the information into a GIS-usable format. Ideally, you would have photos for different years, thereby allowing you to look at change over time. Your mission with this exercise is to develop a land cover map for the Colgate campus using a black and white 1935 air photo. This photo, which was scanned from a paper source, is named Campus1935NR. I'm sorry to report that this image is not georeferenced. But this is not a problem for you because you know how to georegister such imagery. All you need is a georegistered image or map of the campus with features that are identifiable on both images. We happen to have such an image, which shows the Colgate campus in 2008. Its coordinates are NY Central State Plane Feet NAD83.



1935



2008

Actually, the 2008 photo is made up of two separate images called **c_10981028_24_19200_4bd_2008.jp2** and **c_10981024_24_19200_4bd_2008.jp2**. These images, along with the **Campus1935NR** image can be found in your Lab5 archive. Also in the archive is a polygon shapefile called **ColgateCampusClip** which defines the areal extent to which you will work and can be used to clip your product.

Your objectives in this exercise are to:

1. Georegister the 1935 black and white campus photo to NY State Plane feet NAD83 using the 2008 air photos.
2. Create a new feature class within your home geodatabase into which you will digitize land cover. The classes that you will map are **water, forest, buildings,** and **non-forest**.
3. Heads-up digitize these features from the 1935 map. Stay inside the ColgateCampusClip Area polygon.
4. Create a well-designed color map that displays Colgate's 1935 land cover.
5. On the map, include a well-designed table that reports the area of each cover type **in acres** in 1935 (*on the map*, not on a separate sheet of paper). Also, include the total area (sum of all four land use areas) in the table. You may want to create a field and calculate geometry for the desired units. (Create a new field (name=AreaAcres, type=float, accept defaults for the precision and scale) in the ColgateCampusClip shapefile. Right-mouse on the new field, select Calculate Geometry. Click "Yes" when the warning window comes up. You will go through the windows to calculate area in US acres of ColgateCampusClip (making sure you use the coordinate system of the data frame).)

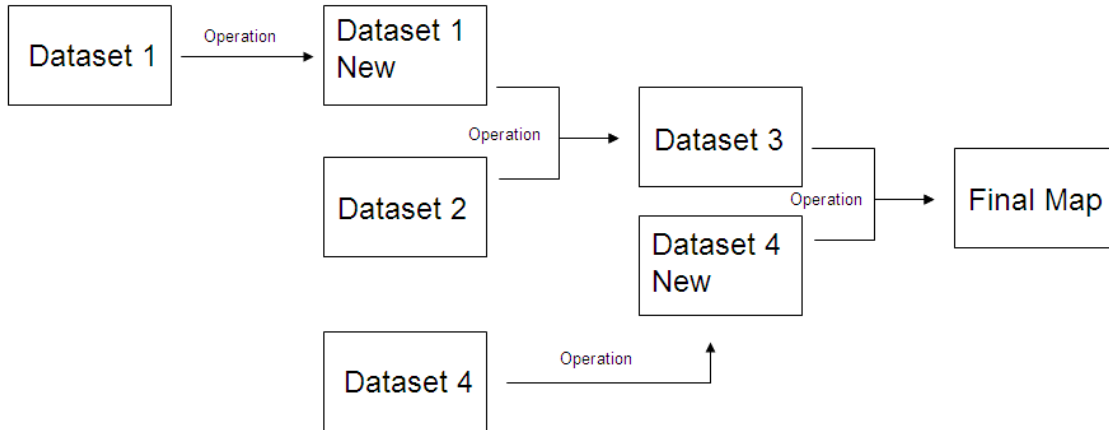
You may use either the "create report" tool (Tools → Reports → Create Report...) or insert a table created in Excel (Insert → Object → Microsoft Office Excel Worksheet). The latter option is probably less cumbersome. Pay attention to the unit and meaningful decimal places.

6. You will be using the outcomes of this exercise in the next week's lab. Make sure that you keep a good track of all the files and outcomes.
7. *Optional:* If you want to review/solidify your understanding of the geodatabase structure, consider adding a line feature class, showing major streets.

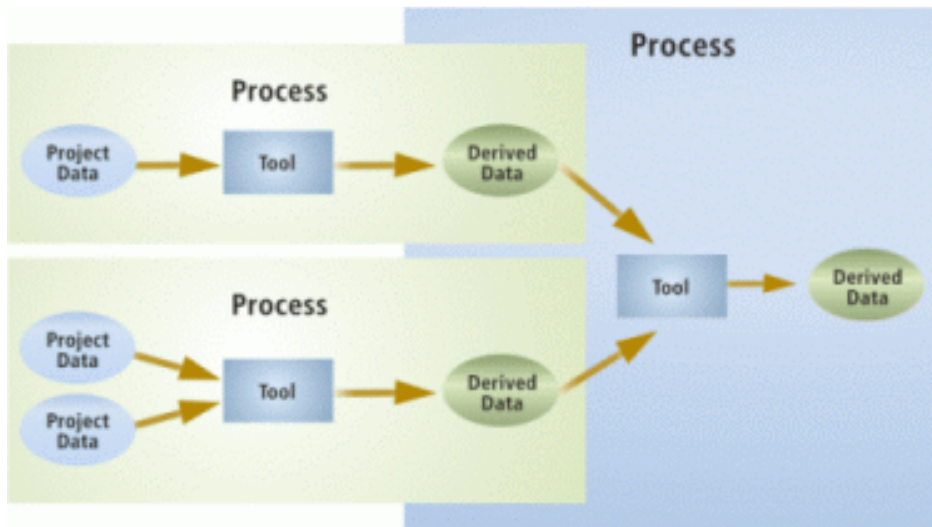
Thinking through how to do things is going to be a part of lab moving forward. We would encourage you to flesh out your method in advance of actually pushing buttons. To reward you with your conceptualization we are asking you to develop a flow chart

that indicates the various steps. Learning how to construct flow charts is a valuable skill –one that will come in handy on your project later. *I use PowerPoint to construct such flow charts, but you may use any program you are most comfortable with. A simple example of a flow chart is shown below. Submit this diagram with your map.*

Browse the hallway for other example flow charts.



Or:



Note: If you have trouble printing, try exporting your map. To go File →Export Map.... (Fig. 1)

GEOG 245: Geographic Information Systems
Lab 05

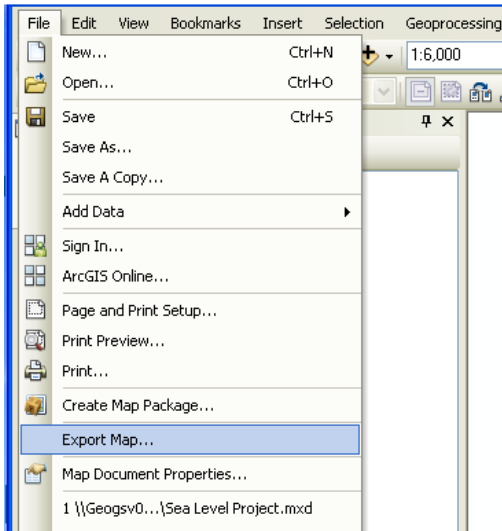


Fig. 1

You'll get the Export Map window (Fig. 2). Note that the save as type is a JPEG (*.jpg), as that is among the most universally accepted graphic formats, and that the resolution is 96-98, which is good enough for most maps. If you're doing a really large, detailed map you'd like to expand a great deal, then go up to a resolution of 150, but no more as that takes a while longer to save and open and work with. Save this file with the name of your choosing in your workspace.

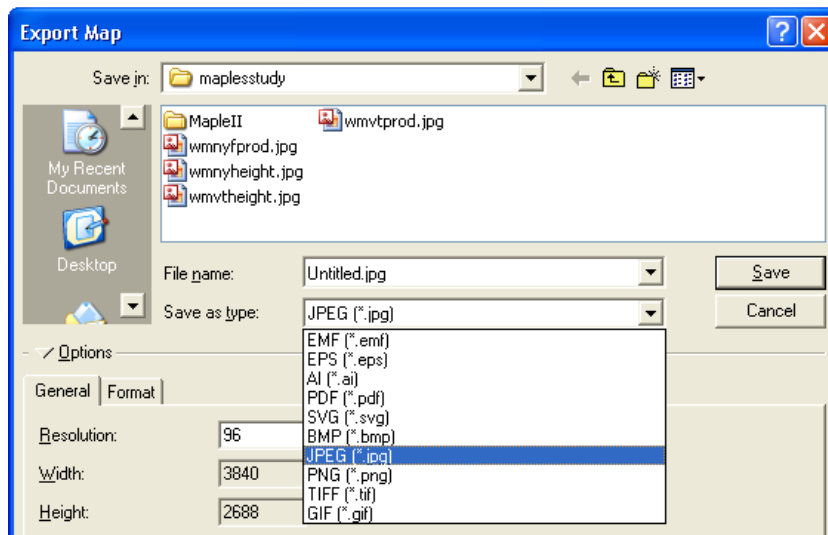


Fig. 2

Go find your file (it will most likely open up in MS Photo Editor) and print (File→Print), pick your printer, and do a full page print.