

ARCH 1291

Visual Studies II

CUNY - New York City College of Technology
Architectural Technology Department

Visual Studies Exercise.Topic05 (Architectural Paleontology) Geographic Information Systems (GIS)

Part 2

From: AP

Medium: GIS

Concept: Basic Skills – Visualizing Data

Date: 09/24/2012

Subject: Visualizing Historic Data for Countries / 2

THIS IS THE SECOND PART OF THE EXERCISE. IF YOU HAVENT ALREADY COMPLETED THE FIRST PART, PLEASE PROCEED TO THE FIRST PART OF THE EXERCISE.

This topic involves an analysis of historic data on country level, using the following indicators:

- GDP
- Climate (Average Annual Temperature)
- Population
- Land Area
- CO2 Emission Level
- Percentage of Urban Population

These indicators are derived and joined from multiple datasets,¹ with the goal being to run a comparative analysis on countries. The comparative analysis can be made between different countries or between different years on a single/multiple country. The deliverable of this exercise will be multiple maps analyzing different eras on certain indicators.

Data inventory for this exercise:

- World_Counties.gdb: A geodatabase file with country borders and an attribute table for:
 - GDP (Data From 1600-2008)
 - Population (Data From 1600-2030 projected)

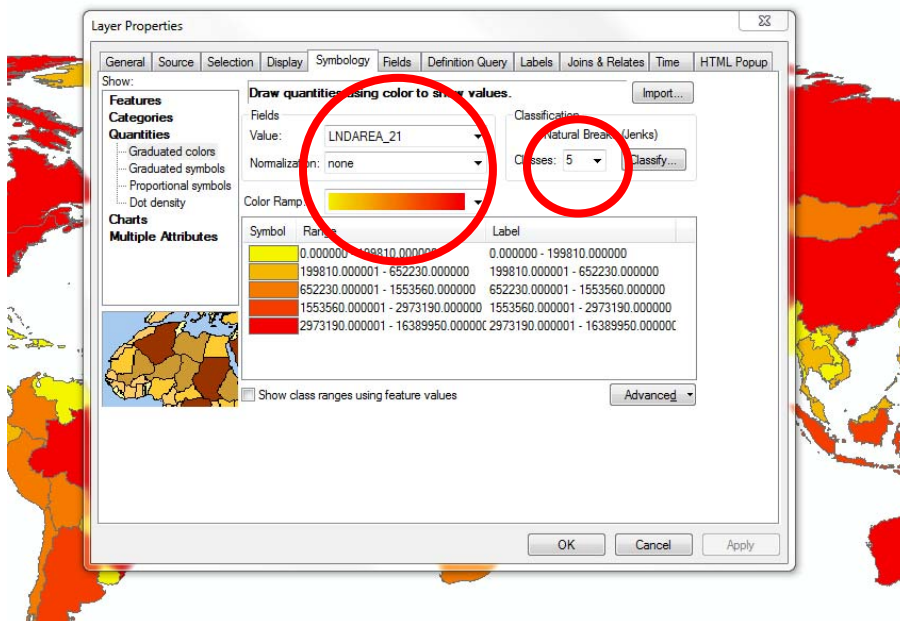
¹ There are some GDP values for certain countries that go back to 17th century. Since there is no record of indicators before the modern era, all the historic data is derived and calculated by using models. All the data after 1969 are derived directly from World Bank Yearly Reports.

- Land Area (Data from 1920-2010)
- CO2 Emission Value (Data from 1960-2008)
- Urban Population Percentage to Total Population (Data from 1960-2008)
- Cities.shp: A shapefile major city location points
- Evtempc: A Raster dataset that shows average temperature values from 1950-2010 in Degrees Celsius.

This exercise will require all students to develop a series of maps using different indicators. All maps will be pinned up together in a linear format. Please keep your map format consistent throughout the exercise.

Part II of the Exercise

1. At this point, you have two maps from previous part of the exercise.
 - Climate (average Annual Temperature
 - Population
2. Load your last map file which you created population maps.
3. Save this map as a new map file. We will use Land Area data to create this map.
4. Right click All World Countries layer (the copy used to display population) and go to symbology tab. Change the Value from Population to Land Area (LNDAREA_##) of the year of your topic. Use 5 for the classification. Change the color ramp to the gradient from yellow to red. Click Ok. (The land value fields are in KM²)



5. Now do the same for the small key map that shows the world map. There is one easy way to copy the symbology from an existing layer. When you are in the symbology tab, you can click import and choose the source layer that this layers symbology will be based on. Usually this is easier and more efficient than doing it all over again.

- Change the title to Land Area by Country (in KM²)
- Your map extents should be the same as previous maps. Make sure the display scales are consistent and other layers that show your topic's city and country name labels are visible.

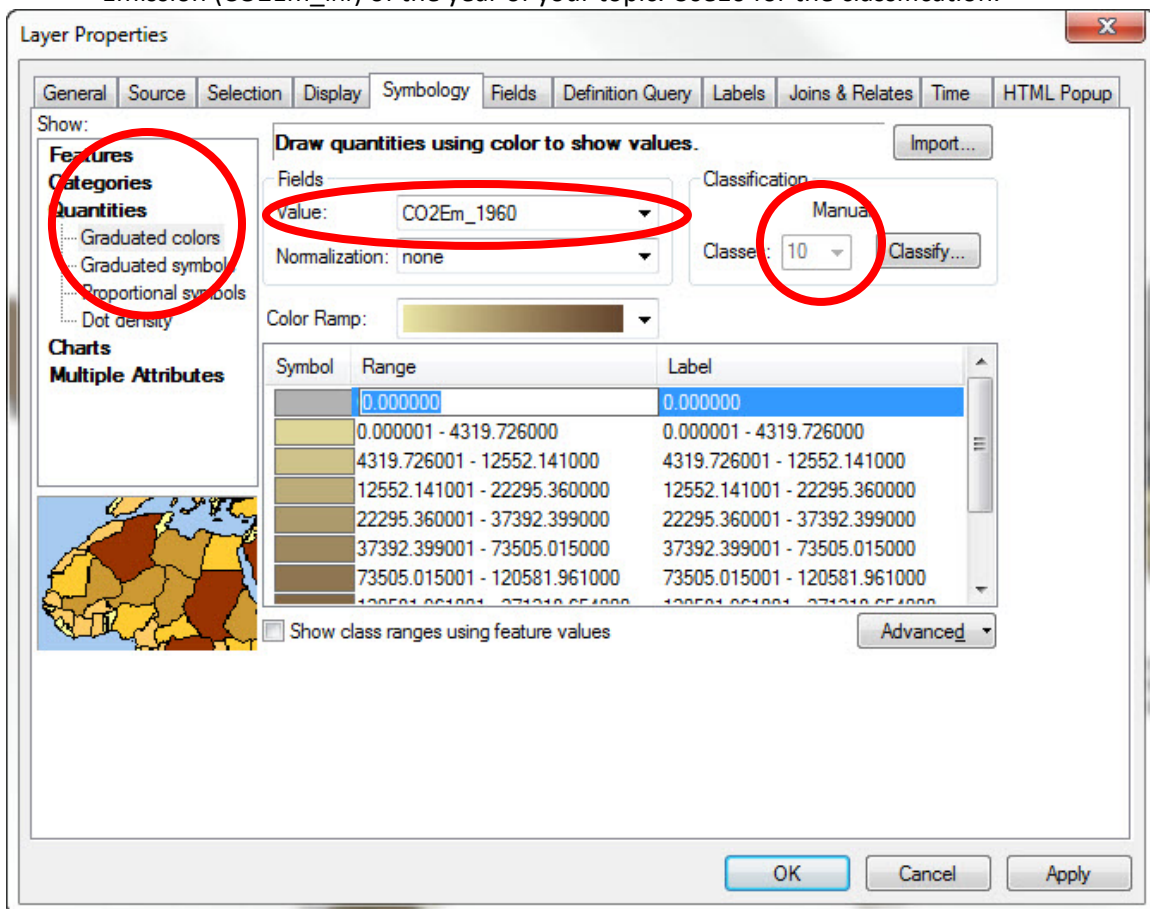
Export your map as a PDF. Since all the data on these maps are vector based, you can control the colors and line thicknesses in Adobe Illustrator.

_____END OF EXERCISE_____

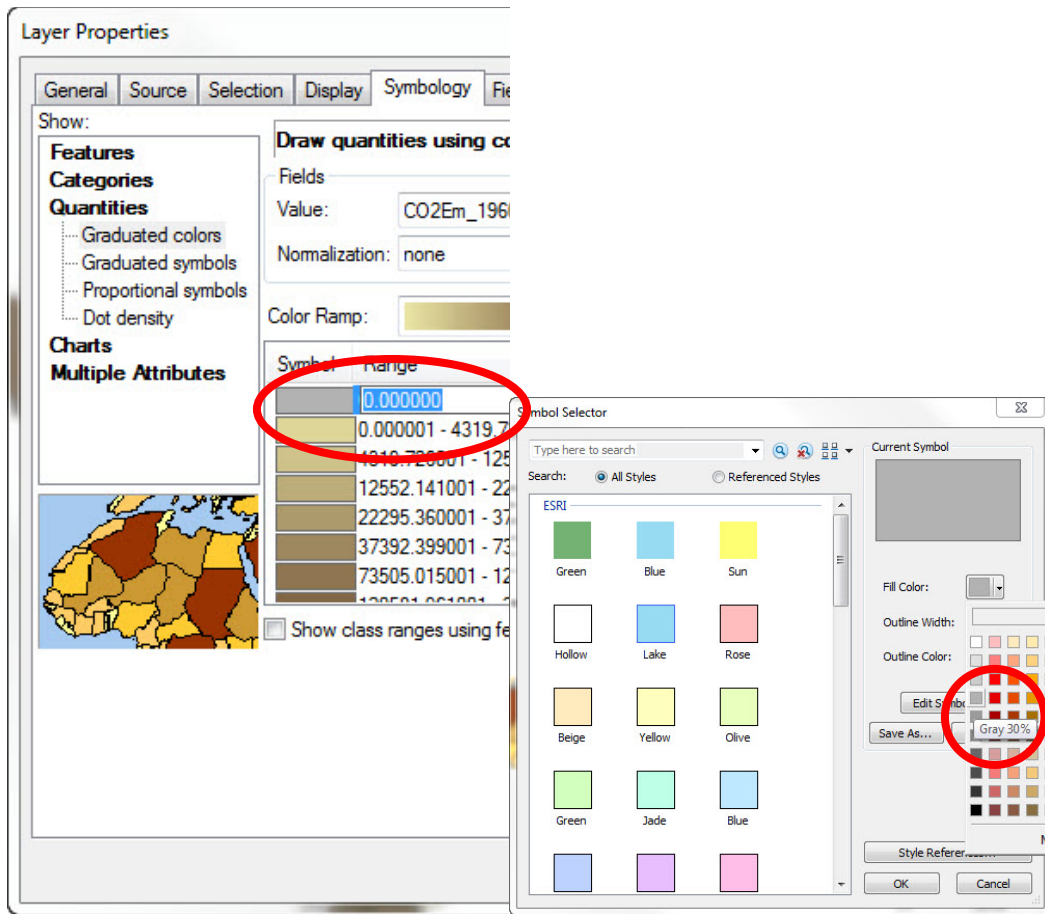
_____EXTRA CREDIT FOR MAPS BELOW_____

_____DATA AVAILABLE FOR BELOW TOPICS ONLY AFTER 1960_____

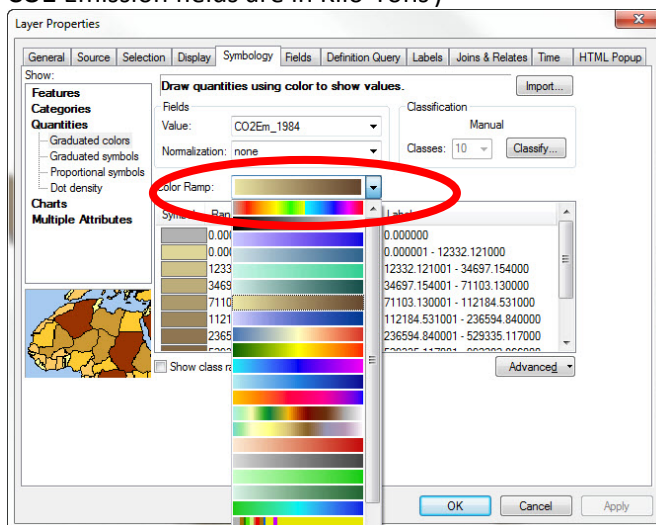
- Save this map as a new map file. We will use CO2 Emission data to create a new map.
- Right click to click All World Countries layer (the copy used to display the land area) and choose properties. Navigate to symbology tab. Change the Value from Land Area to CO2 Emission (CO2Em_##) of the year of your topic. Use 10 for the classification.



- Some countries did not published data for their CO2 emission rates until 1990's. Although we use 10 classes for classification of the data, we have to assign one flat color to value 0 which indicates there is no data. Go and click the first range field and type the number zero (0). This will be out no data class. Change its color to 30% grey.



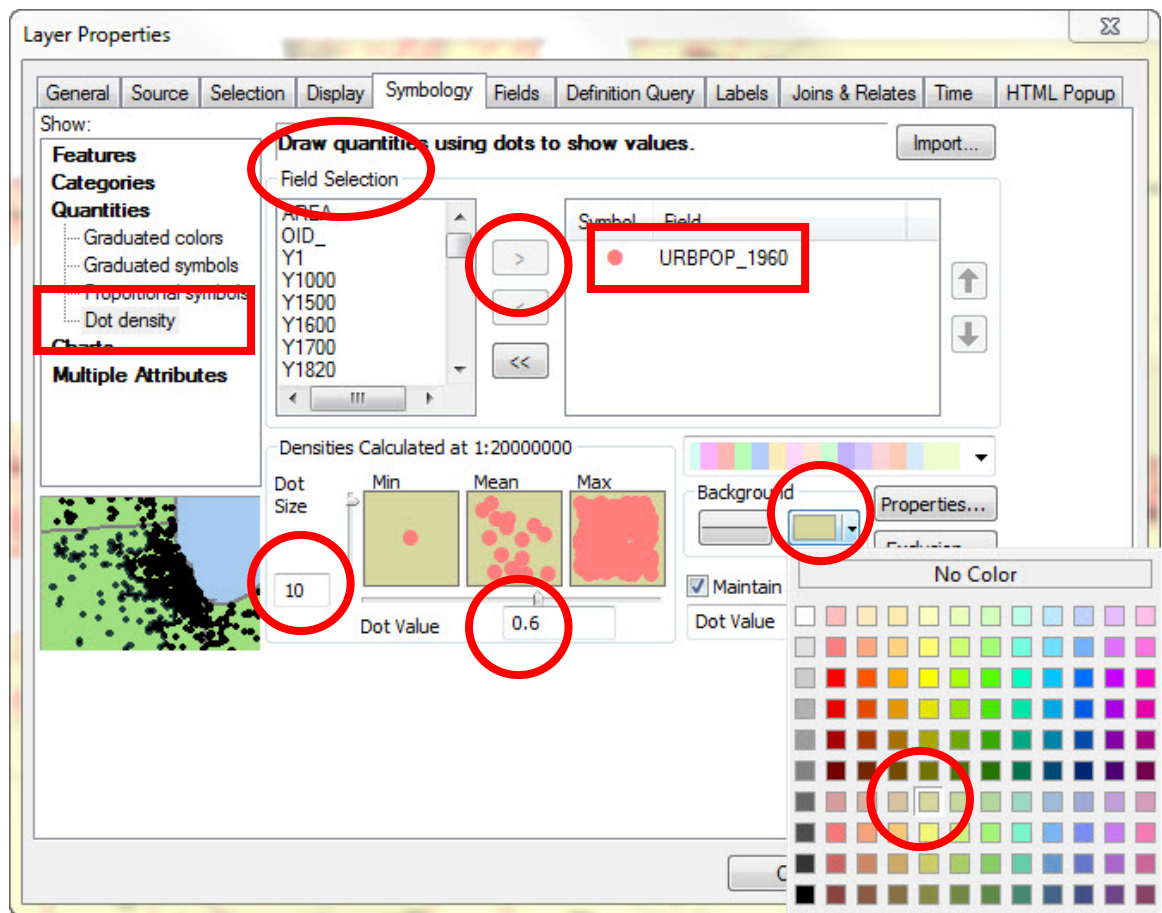
11. Change the color ramp to brown gradient (as indicated on below image). Click Ok. (The CO2 Emission fields are in Kilo-Tons)



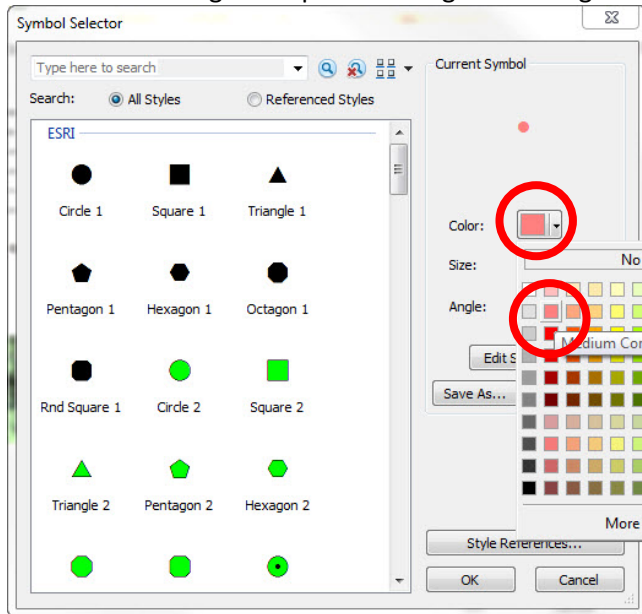
12. Now do the same for the small key map that shows the world map. There is one easy way to copy the symbology from an existing layer. When you are in the symbology tab, you can click import and choose the source layer that this layers symbology will be

based on. Usually this is easier and more efficient than doing it all over again.

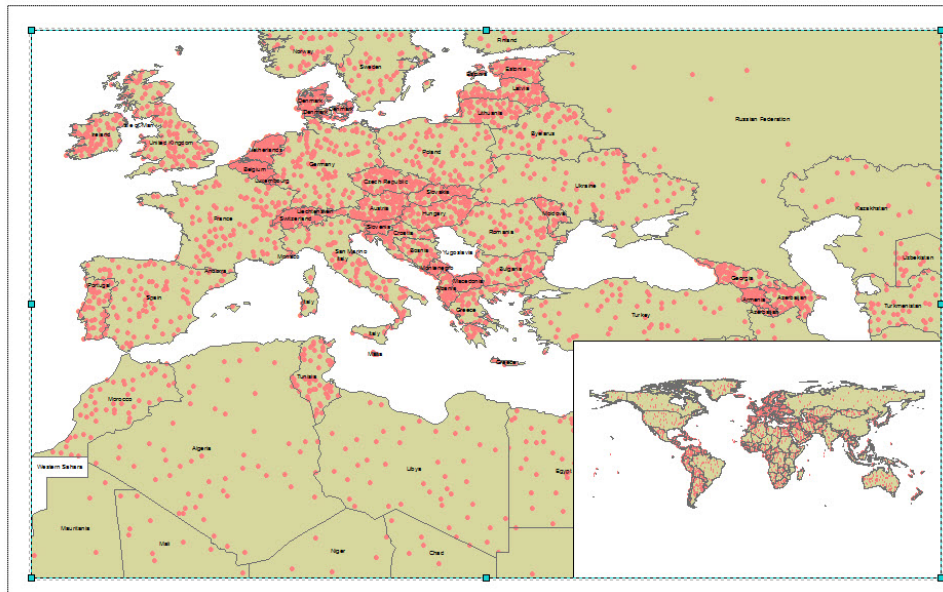
13. Change the title to CO2 Emission by Country (in Kilo-Tons)
14. Your map extents should be the same as previous maps. Make sure the display scales are consistent and other layers that show your topic's city and country name labels are visible. If not follow the steps in the previous exercise sheet to set the paper size and scales.
15. Export your map as a PDF. Since all the data on these maps are vector based, you can control the colors and line thicknesses in Adobe Illustrator.
16. Save your map as a new map file. We will use Urban Population data to create a new map. The Urban Population data is the percentage of population living in urban areas.
17. Right click to click All World Countries layer (the copy used to display the CO2 Emission) and choose properties. Navigate to symbology tab. On the left panel of symbology tab, find and click Quantities, Dot Density. This will change our symbology to a dot density based map. Choose your field to Urban Population (URBPOP_####) of the year of your topic. Click the right arrow to use this field to activate in your map. Click the right arrow to use this field to activate in your map.



18. Now double click the default point symbol right next to your active field (URBPOP_####). Change its color to medium coral light and click ok. This sets up our color symbology for dots. Click to background fill option now. It's the button on the right underneath background panel. Change the background color to lime dust.



19. Set the dot size to 10 and the dot value to 0.6. Dot size defines the default scale of each dot and dot value defines what each dot represents on your map. For example, if your dot value is set to 1, and your attribute table has a value of 30 for the field that you map, you will have 30 dots in that polygon. Click Ok and do the same thing for you're the other layer that displays on your keymap. This time, set both dot size and dot value to 1. Use the same settings for background and dot colors. Your maps should look like the image below.



20. Change the title to Percentage of Urban Population to Total Population by Country.
21. Your map extents should be the same as previous maps. Make sure the display scales are consistent and other layers that show your topic's city and country name labels are visible. If not follow the steps in the previous exercise sheet to set the paper size and scales.
22. Export your map as a PDF. Since all the data on these maps are vector based, you can control the colors and line thicknesses in Adobe Illustrator.
23. When you have finished, please submit the digital file(s), named Professor's Last Name_FL12_Your Name_GIS . Please print out your 11" x 17" maps. Since you are creating multiple maps, please assign a number to your file name to indicate which map you are saving.
24. Do not forget to save all your files after completing the exercise. Make sure you copy your map files and your data files to your personal / USB drives.