ANTH 583 – GIS and Imagery Analysis
Project 1
Due: February 25th by Midnight

Identifying and digitizing Kurgan Mounds in Southeastern Kazakhstan

This project is designed for you to demonstrate the use of four basic GIS skills:

1) Data import and export QGIS
2) Exploration of GIS data with queries and zooms
3) Vector digitizing and basic data management
4) Production of a styled cartographic map

Part 1: Digitizing data in QGIS.
Use QGIS, the skills you've acquired during the lab practicums, and the starting data provided for you, to:

1) Load high resolution aerial imagery from Bing Maps as a base layer in QGIS
2) Load existing vector layers into QGIS, and adjust opacity and other styles.
3) Create a new vector layer, and initialize an attribute table.
4) Visually explore the high-resolution imagery to discover features.
4) Digitize features and add records to the attribute table.
5) Export the final digitized vector file.

We will use the OpenLayers plugin to load the Bing Maps base map. Load the "Kurgans_Survey_Grid" shapefile, query the table to discover your survey grid square(s), and set the style of the vector polygons to highlight your area to digitize. You will create a new shapefile vector layer, and attempt to digitize all of the kurgan mounds in your survey area (we will discuss what a kurgan is in class). You should digitize these as *points*. Your attribute table should have TWO fields in addition to the basic integer category number: "k_type" and "k_size".

"k_type" should be set as a text field of 1 character, and refers to the type of kurgan. Use the following codes:

m = "Mounded Earthen Kurgan." A kurgan made of an apparent earthen mound
r = "Rock-covered Kurgan." A kurgan made of an apparent mound or concentration of rocks
g = "Ringed Kurgan." A kurgan mound with a ringed ditch or ring of rocks.
d = "Destroyed Kurgan." A kurgan that appears to have been destroyed or flattened.
p = "Possible Kurgan." Use if you can't be sure if this is a kurgan or not.

"k_size" should be set as an integer field, and refers to a basic category of kurgan diameter. Set up the map scale so that you can approximate the diameter in meters. Round to the nearest whole meter.

Before you begin digitizing, ensure that the project CRS matches that of the Bing Maps data (WGS84 Pseudo Mercator) and that your newly created vector file uses this projection system as well. As you digitize, be sure to *save often as you along.* When you are done, ensure the final edits to your new vector file are saved, and exit the editing session. Make sure your file is saved somewhere where you can find it. You will submit your vector points file with this assignment.

Part 2: Cartography and Thematic Map

Using your newly digitized vector points file of kurgans, create a finished map that thematically displays several layers of GIS data on top of the Bing Maps imagery. Your thematic maps should convey information about the kurgan size ***and*** type in your survey area. You will need to use both color and symbol size or type to display this information.

Use the QGIS "Print Composer" to compose a formal cartographic product (i.e., a "map") of your themed survey results in relation to the Bing Imagery base-layer and any other layers you chose. This final map MUST include a map scale, north arrow, and vector symbols legend.

Part 3: Writeup

Prepare a brief report (1-2 pages) about your analysis. This should be roughly divided into three sections.

In the first part, describe the way you approached digitizing the kurgan data in your survey square. Tell me about the general procedures you used while doing it, and any difficulties you encountered along the way. How did you determine kurgan type and size? What would you have done differently?

In the second part, refer to your thematic map. Describe the colors and symbols you chose, and tell me why you chose them. Describe any spatial trends in the kurgan data you collected, and how the theming makes these trends clearer to see.

In the third and final part, Reflect in general about the process of manually digitizing GIS vector data and of preparing thematic maps with this kind of data. How might error propagate through the analysis, and how might that affect the outcome? What other types of analyses would you have liked to do to extend what you did here?

You will turn the writeup in in digital format through TurnItIn on Blackboard. You should include your thematic map as a figure embedded in the writeup, and should refer to it in the text. You should also plan to provide the final points shapefile of kurgans that you created. This can be by e-mail (you will need to zip the shapefile up into a .zip archive), or on a thumbdrive, a google drive link, etc.