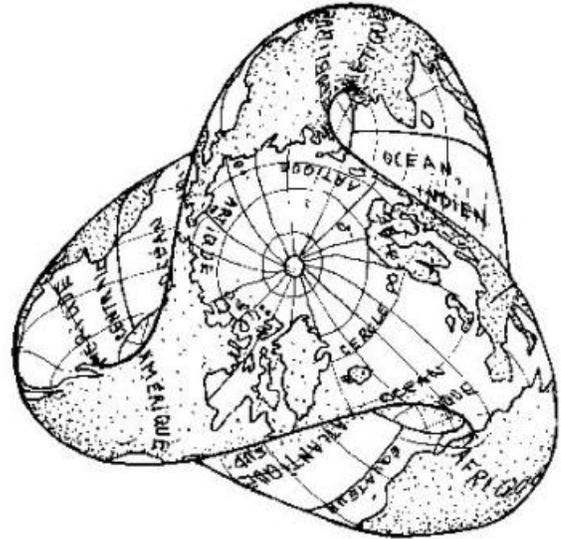


Geography 220 – Topology in ArcGIS

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Today you will be looking at how to ensure data quality within geodatabases. **Topology**, in the ESRI use of the term, allows one to create spatial relationships between different feature classes to ensure that your datasets do not create logically impossible situations. For example, contour lines cannot cross because that would mean that one point in space has two different elevations. While this cannot happen in reality, poor database design and digitizing can allow this to take place in a digital environment. Setting up a topology for a contour feature class that tells the computer that the lines cannot intersect will alert you when you have logical errors.



Today, you will create a topology for land use data near Ridgecrest, California. In *geog220.gdb*, open the topology geodataset and add the four feature classes (*general_plan*, *parcel lines*, *parcels*, and *roads*) to *ArcMap*. To create a topology for these features you first need to understand how they relate to one another.

- **General plan:** this layer shows the intended land use for the area. In other words, a region's general plan dictates where you can and cannot locate certain businesses, apartment buildings, farms, etc.
- **Parcels:** This layer shows the property boundaries in the area. A parcel *must* have one or more general plan designations.
- **Parcel lines:** These are a line version of the polygon parcels layer. The boundaries in both parcel feature classes *must* match.
- **Roads:** This line feature shows the roads themselves, though it was originally designed for routing purposes. This means that the roads themselves don't necessarily correspond with parcel lines even though roads rarely cut across parcels...

Now it is time to create the topology, which is done in the geodatabase itself. Look at the topology poster available in the lab and write down all of the rules that should be applied to the above feature classes.

Topology Rules:

Once you have a list, right-click on the *topology* feature dataset in *geog220.gdb*. Select “new” and then “topology. This will bring up a wizard to guide you through the process.

Completing the Topology Wizard:

1. Hit “next” and name the topology “land_use”.
2. Leave the default cluster tolerance and click “next.”
3. Select the features that will participate in the topology and hit “next.”
4. Ignore the ranking window and click “next.”
5. Add the rules you selected from above and click “next.”
6. Click “finish”
7. Click “yes” to validate the results

Add the new topology to the *ArcMap*. You don’t need to add the associated layers because you already did earlier in the exercise. You will see pink and red features where topology errors are occurring in the existing feature classes. To fix these errors, you will need to “Start Editing” (from the *Editor Toolbar*) and also make sure to turn on your *Topology Toolbar*.



The *Error Inspector* allows you to see all of the topology errors in the geodataset. If you right-click on any of the errors and select “zoom to” the map will immediately go to that error on the map. Use the editor tools to fix whatever problem exists. If you then click the “validate topology in current extent” button from the topology toolbar you will quickly see if your editing worked to fix the problem.

Continue to go through each error until the geodataset is fixed. Once you are finished do not forget to “save edits” and “stop editing” in the *Editor Toolbar*.