Fundamental GIS Editing Techniques

Room A

Session Block 3

12:40 pm – 1:10 p.m.

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26th Annual OKSCAUG Conference
September 26, 2023

Subdivision Spatial Accuracy - Problem

Scenario 1

- A subdivision is drawn in with good attributes but is not spatially correct. How do I redraw the subdivision more accurately & transfer the good attributes from the existing data to the new, spatially corrected polygons efficiently? Can I draw the Lots, Blocks, & Roads in more accurately that just by guessing? How?

Assess what resources do you have?

- Old plat that shows the lots, blocks, & roads
- Accurate Orthophoto
- Good attribute data on spatially incorrect polygons
- Fundamental Geometric Techniques in conjunction with GIS Tools
  - Long foresights & backsights
  - Triangles, Circles, & Midpoints (Fundamental Geometric Techniques)
  - Cut Polygon / Merge Features (Cut big & let the tool do the work)
  - Autocomplete does more than you think…

Subdivision Spatial Accuracy – Solution Process

Spatial Correction

- Use Orthophoto & hardcopy / scanned plat to spatially & more accurately draw in the subdivisions.
- Using construction triangle polygons to find centerlines of existing streets on orthophotos by using visible curb lines & midpoints to determine street centerlines.
  - Use bowtie polygons to create vertexes at critical points for construction polygons.
  - Draw centerlines & offset to determine the Right of Way
  - The remainder within the Right of Way are the Blocks. (Check Distances With Plat)
  - Split the Blocks into Lots. Errors will be constrained to each block.

You now have 1 dataset with good attributes & 1 dataset with good spatial accuracy.

Attribute Update

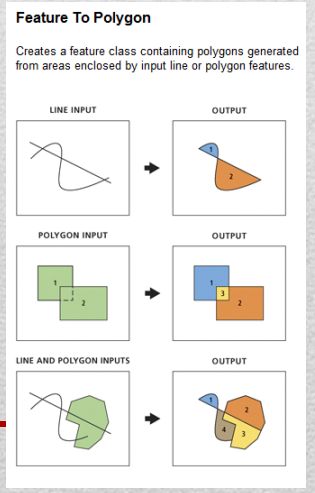
- Have a backup copy of the attribute accurate data.
- Cut the attribute accurate lots to create a “seed” polygon for each lot to hold accurate attribute data completely within the spatially accurate polygon of each lot. *Cut out in mass cuts.*
- Delete all the newly created polygons except one “seed” polygon completely contained in the spatially accurate lot.
- Copy all the spatially accurate lots & paste them into the attribute accurate dataset.
- Merge each spatially accurate lot polygon to the internal seed polygon that holds the accurate attributes.

Scenario 2

- I have large polygons that should represent boundaries that are predominately delineated by roads. These boundaries **SHOULD** be topologically identical to the roads for the most part. Even though they are visually close they are grossly incorrect. How do I update my polygons to accurately be delineated by my road centerlines and retain accurate attributes of the original polygons?

Assess what resources do you have?

- Spatially Accurate Road Centerline Layer *(Or at least livable for the foreseeable future)*
- Boundary / District / Zone / ESB / ESN polygons with good attributes & visually coincidental boundaries with road centerlines.
- Fundamental Geometric Techniques in conjunction with GIS Tools
  - Feature To Polygon
  - Triangles, Circles, & Midpoints (Fundamental Geometric Techniques)
  - Cut Polygon / Merge Features (Cut big & let the tool do the work)
  - Autocomplete does more than you think…



Spatial Correction

- Check you road centerlines to ensure they are spatially correct. **This is critical.** If it is not spatially correct enough, stop & focus your efforts on spatially correcting your road centerlines to an accuracy you can live with for the foreseeable future.
  - Use your spatially correct road centerlines & use the "Feature to Polygon" tool to create a new polygon feature class of all the small polygons created by the intersections of your road centerlines.
    - Depending on how closely your road centerlines follows your polygon boundaries either:
      - Manually select & merge the newly created polygons that comprise the full polygon boundaries
        - Or
      - Select all newly created polygons that have their centroids within a full polygon boundary & merge.
- ***Perform this step with discretion. You want to spatially correct, not just change the polygon boundaries in this process.***
- ***There almost always are instances in most datasets where special detail has to be taken into consideration. Double lane roads, boundaries to extend beyond roads or along undeveloped roads etc…***

Roads to Boundaries – Solution Process *Cont…*

You now have 1 dataset with good attributes & 1 dataset with good spatial accuracy.

Attribute Update

- Have a backup copy of the attribute accurate data.
- Cut the attribute accurate polygons to create a “seed” polygon for each boundary to hold accurate attribute data completely within the spatially accurate polygon of each boundary. *Cut out in center cuts*
- Delete all the newly created polygons except one “seed” polygon completely contained in the spatially accurate lot.
- Copy all the spatially accurate boundary polygons & paste them into the attribute accurate dataset.
- Merge each spatially accurate lot polygon to the internal seed polygon that holds the accurate attributes.

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Bonus Tip – Fast Acreage Estimation

Legal Descriptions with Aliquots

Aliquot Example	Acres	Distance Square in US Survey Feet	Fraction of a mile
Full Section	640	5,280	1
NE (Quarter Section)	160	2,640	1/2
NE of the NW (Quarter Quarter)	40	1,320	1/4
NE of the NW of the NE	10	660	1/8
NE of the NW of the NE of the SE	2.5	330	1/16
NE of the NW of the NE of the SE of the SW	0.625	165	1/32

Example:

NOW THEREFORE BE IT ORDAINED BY THE MAYOR AND BOARD OF COMMISSIONERS OF THE CITY OF ARDMORE, OKLAHOMA:

THAT, Ordinance No. 2537, is hereby amended to correct and change the legal description on the following property:

See line above 40 / 160

A tract of land described as follows: N/2 N/2 NW/4, the N/2 N/2 NE/4, the S/2 NE/4 NE/4 and the SE/4 NW/4 NE/4 of Section 9, T4S, R2E, I.M., Carter County, Oklahoma, containing 110 acres more or less.

40 acres — **40** / 80 / 160

40 acres — **40** / 80 / 160

20 acres — **20** / *See line below*

10 acres — **10** / 40 / 160

40 + 40 + 20 + 10 = 110 Acres