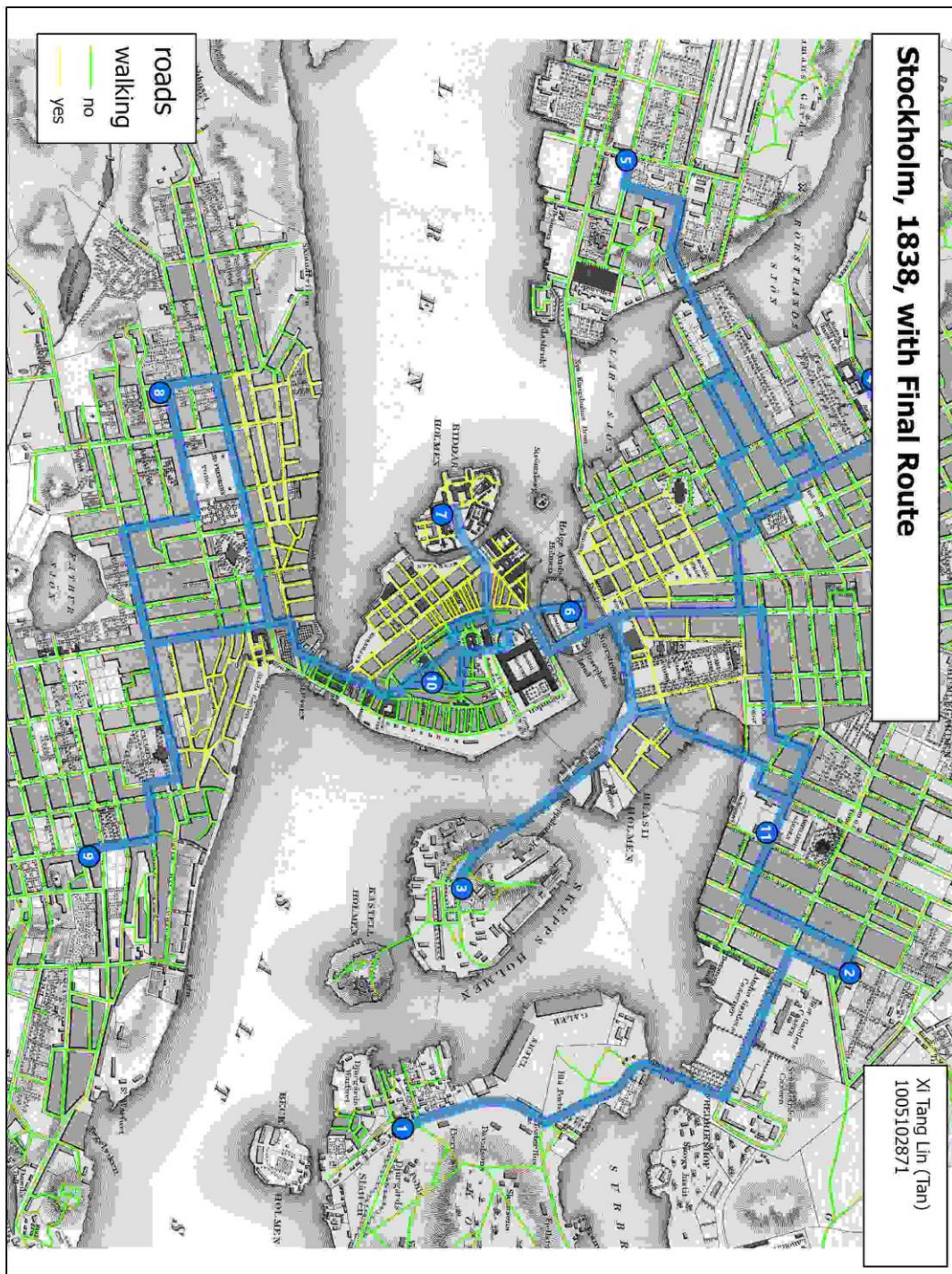


GGRB32: Fundamentals of GIS II

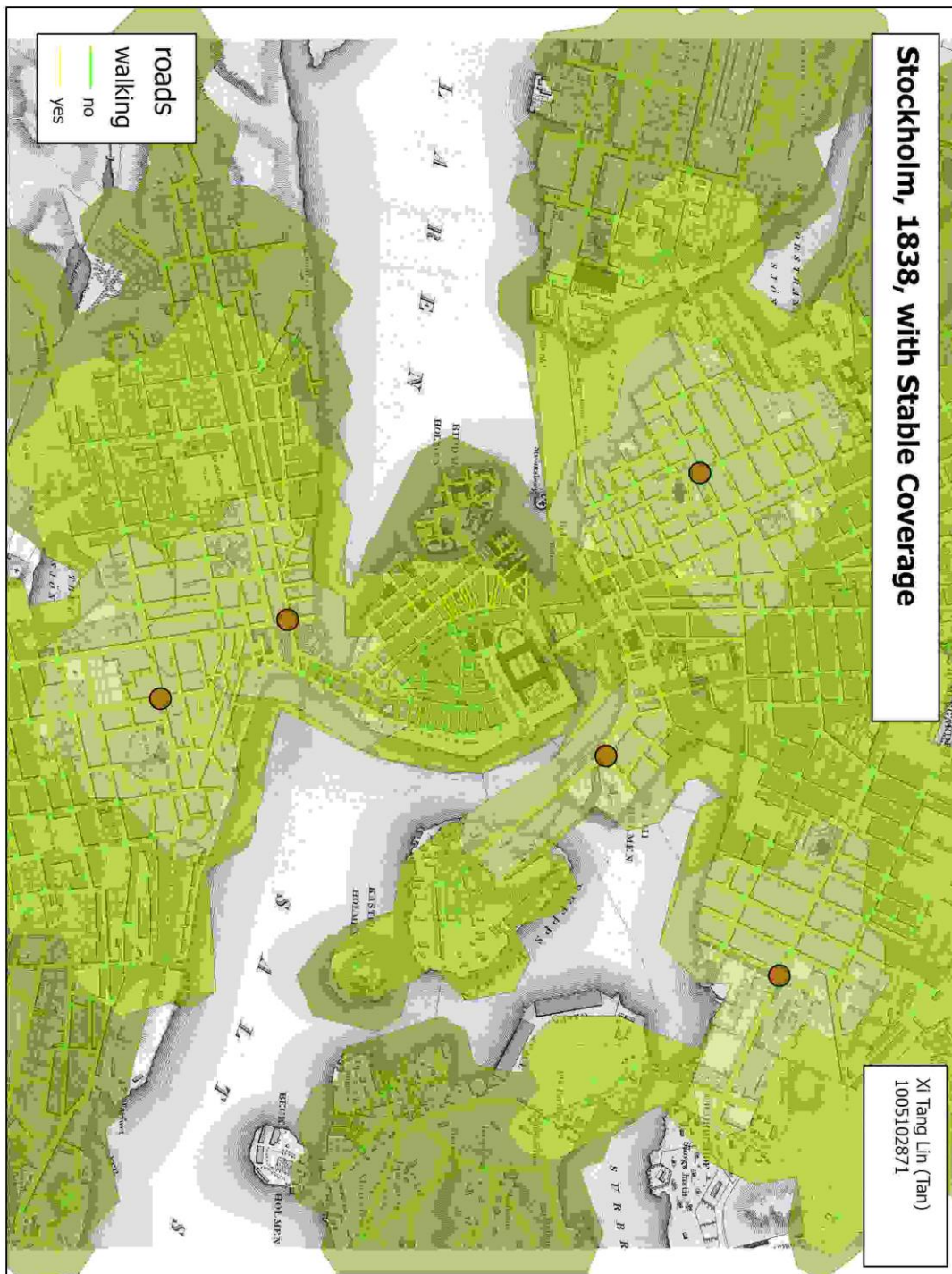
Assignment #4: Introductory Topology and Network Analysis

Xi Tang (Tan) Lin

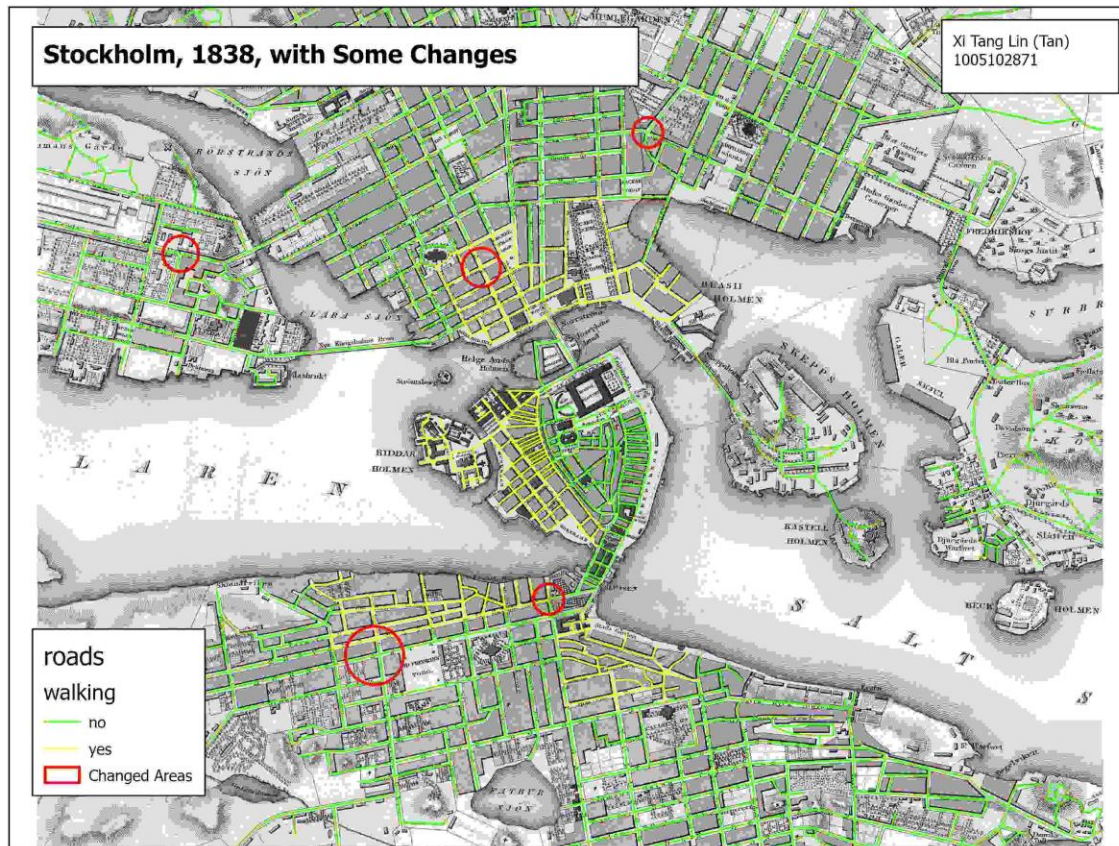
Part a - Route Stops



Part b - Stable Coverage



Part c – Overview of Changes



Major Types of Road Network Flaws

- **Overlapping Roads – Count: 1**
This flaw occurred when two roads were directly on top of each other. I fixed these errors by deleting one of the extra roads. In the singular case for this error, one road segment was clearly more logical than the other, so I deleted the one that didn't make sense.
- **Intersecting Roads – Count 10**
This flaw occurred when two road segments intersected instead of ending at an intersection. I fixed the error by splitting the lines at the intersections.
- **Dangle Errors – Count: 334**
Some of these are actual flaws while some of them are dead ends or roads that were cut off by the edge of the map.

- Road Dangling Before Connecting – Count: 3
This type of dangle affected my routing, so I had to fix them to get a faster route. I fixed them by editing the vertices so that they met with the intersection that they were supposed to.
- Overextended Line Dangle Errors – Count: 2
These don't really affect my routing, so I fixed them for the aesthetics.
- False Intersection – Count: 1
An intersection that looks normal but is made of two turns in the network. I fixed it by making the 4-line segments meet at one point.

The Detection of Network Problems

Overlapping and intersecting roads were problems that were identified and fixed using topology. Topology also detected many dangle errors most of which were benign; however, some of these dangle errors directly affected the final routing. I used topology to find and fix a total of 11 problems.

The other way identified problems was through testing routes. When I initially created the final route there were areas that had suboptimal routes. Like what we did in class, I created another route layer to investigate those areas. This is how I found the dangle errors that affected my route and the one false intersection. I found a total of 3 errors using this method.