Tree-Based Distance Cartograms for Navigation

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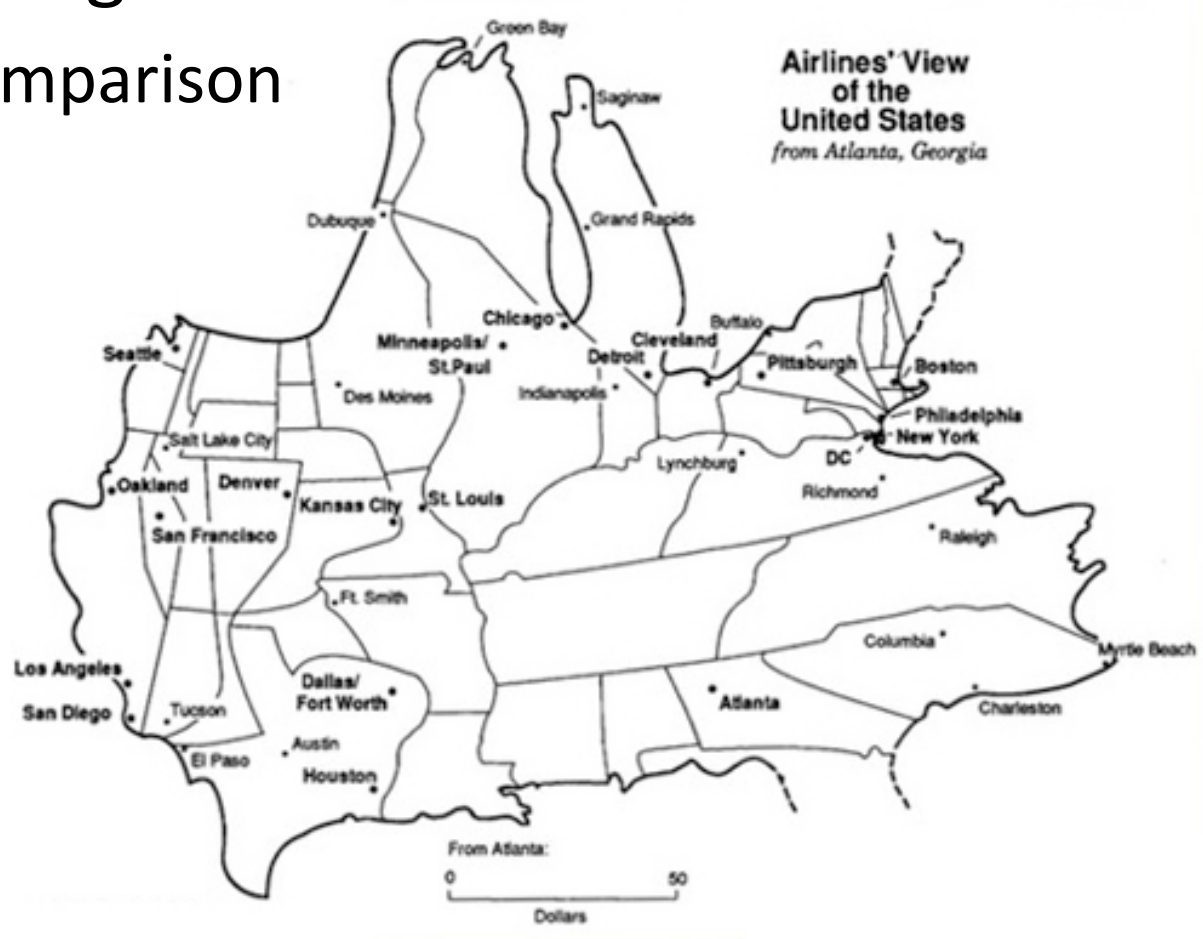
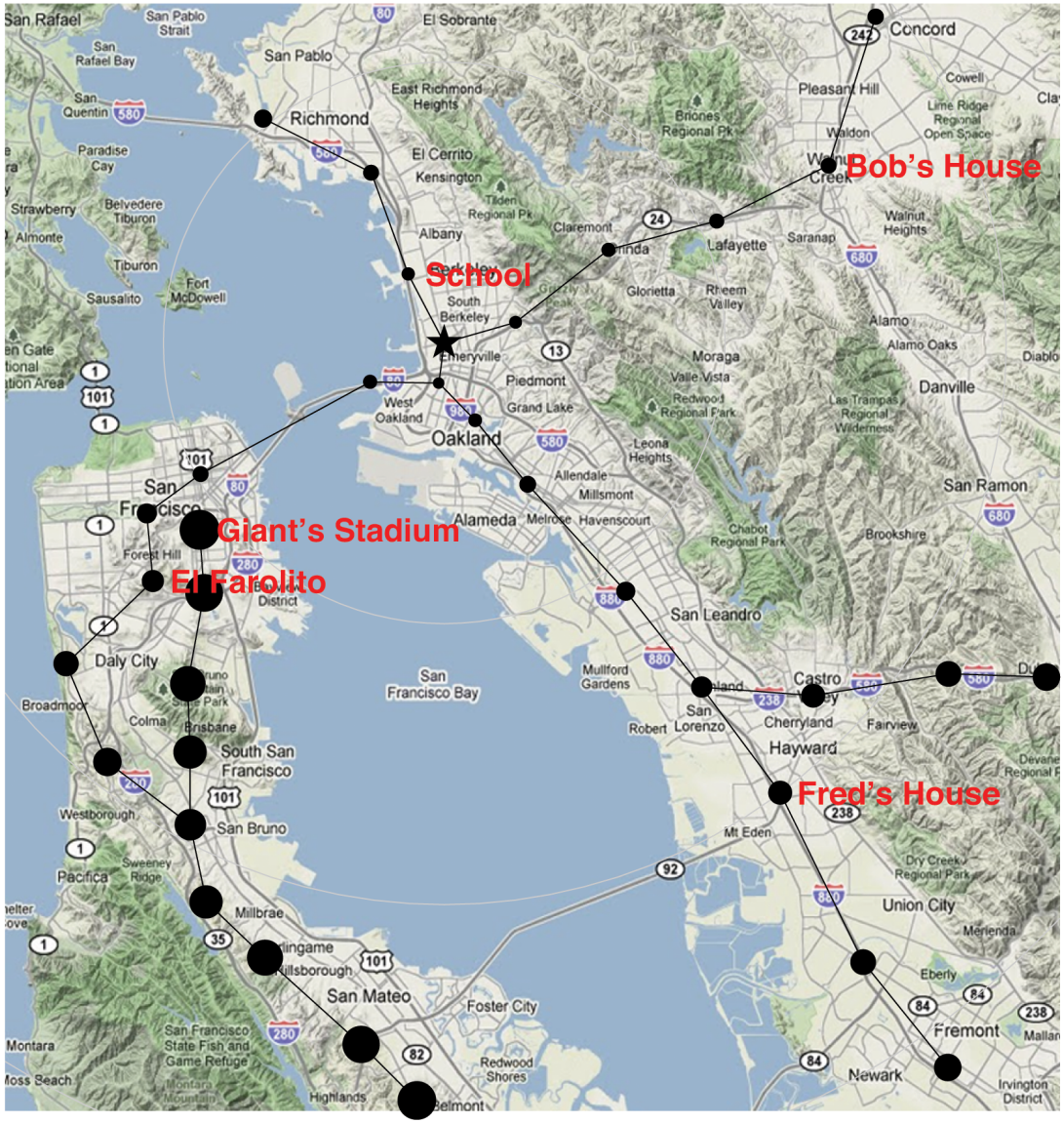
EECS

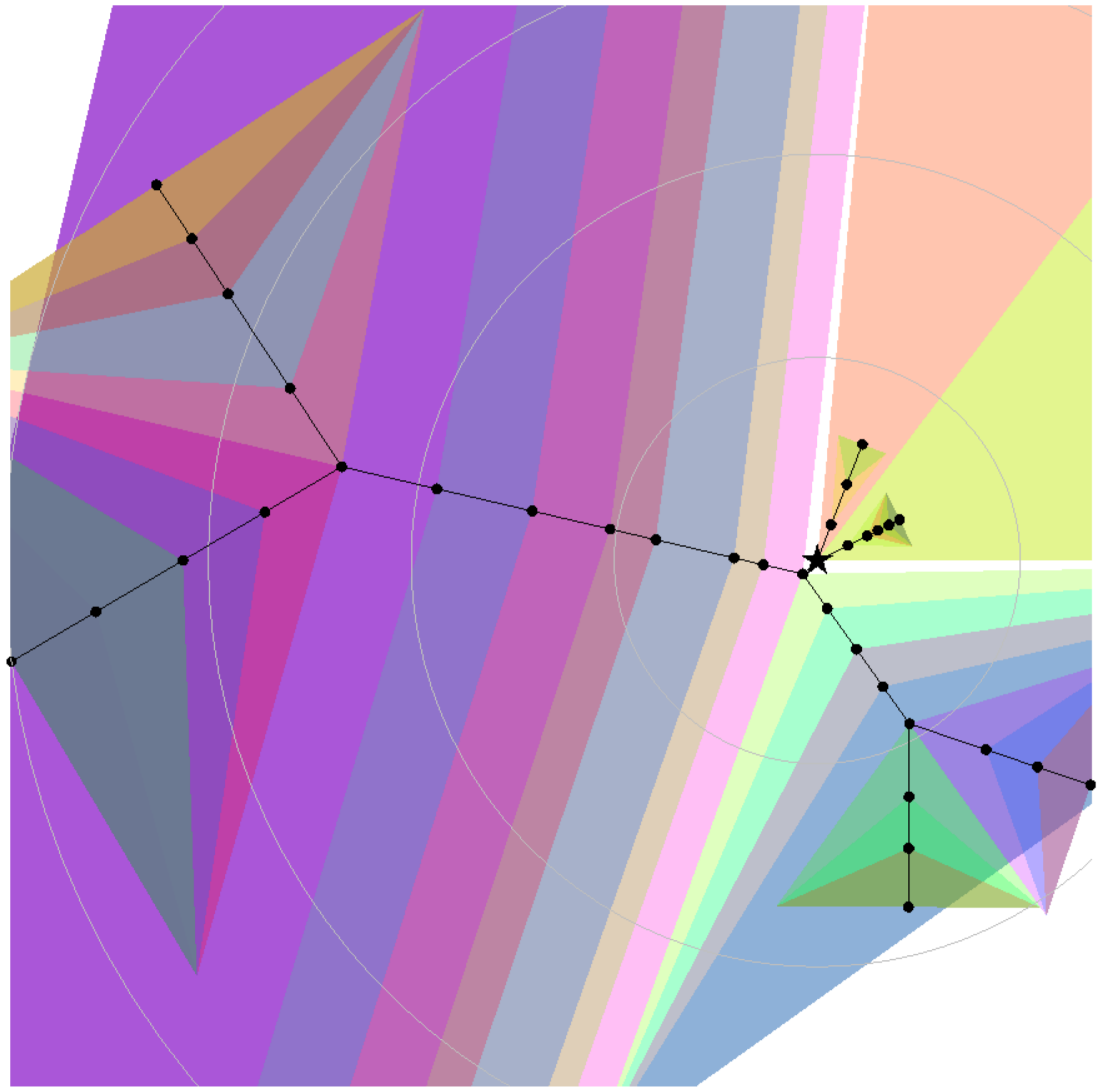
Goals

- Visualize my commute-able neighborhood
- Idea: encode using distance
  - Allows easy comparison
  - Intuitive?

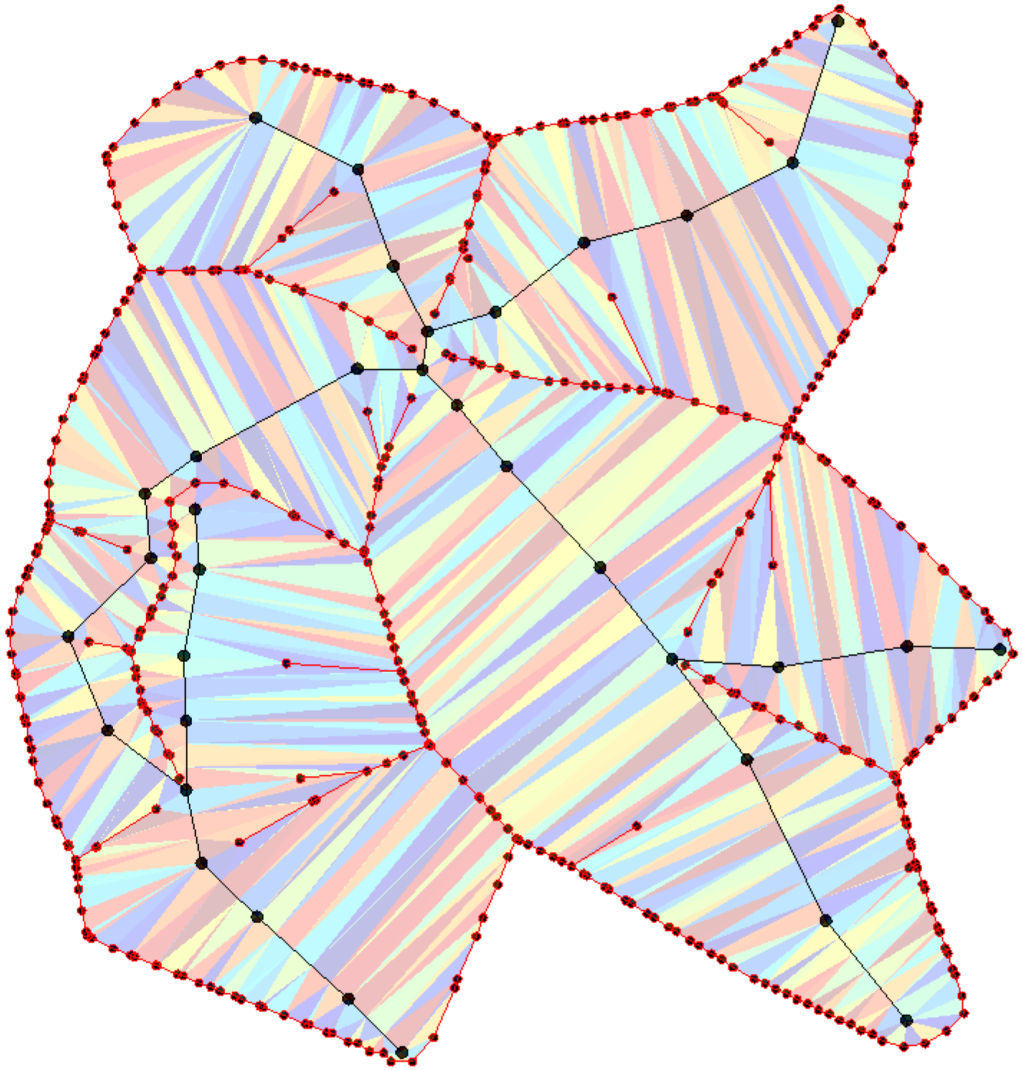




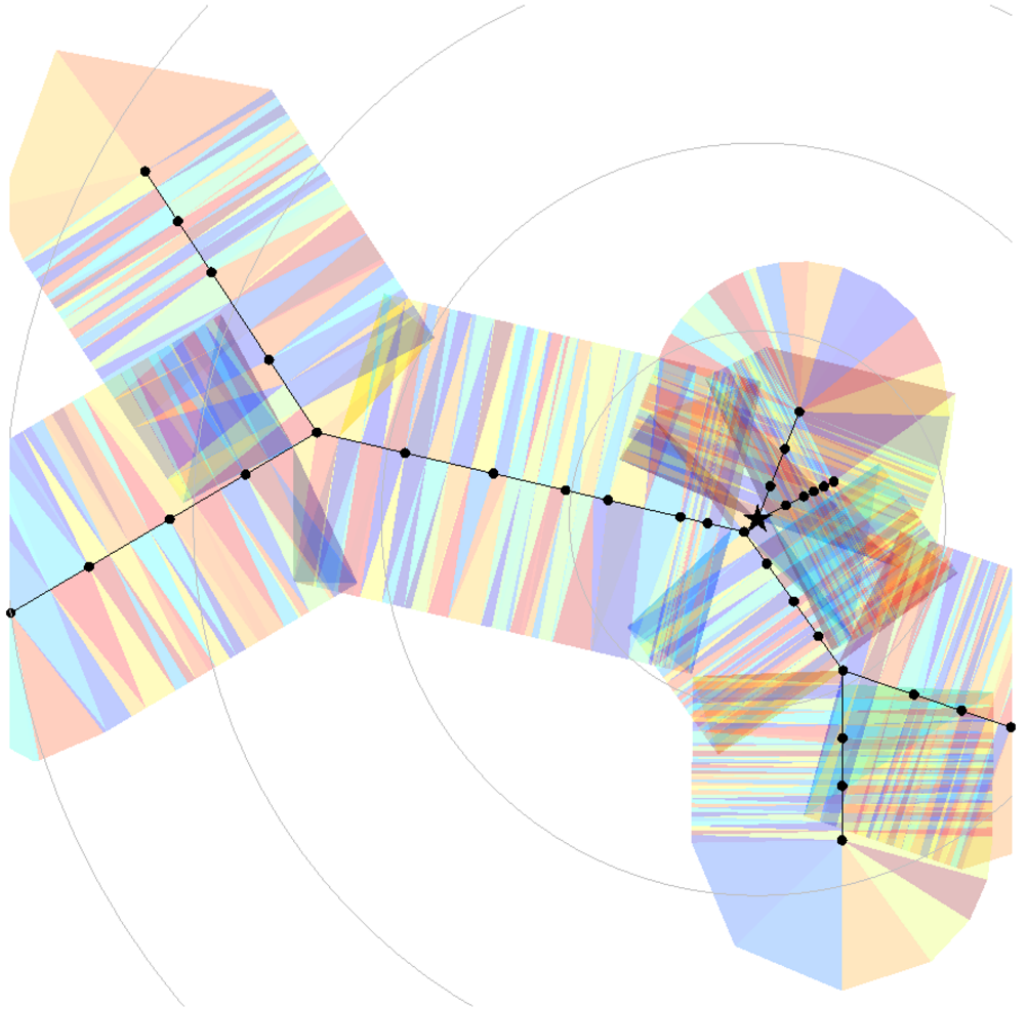
Input Map + Tree



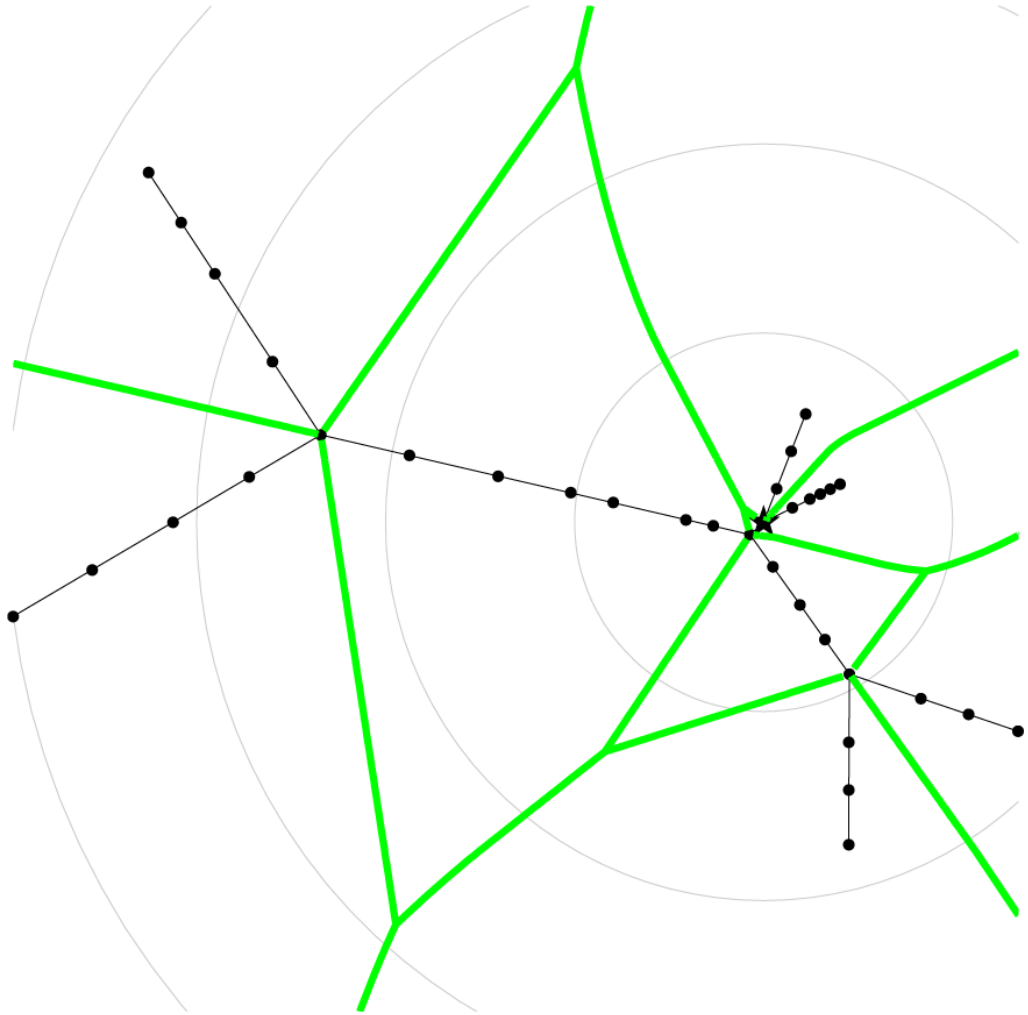
Warped Tree



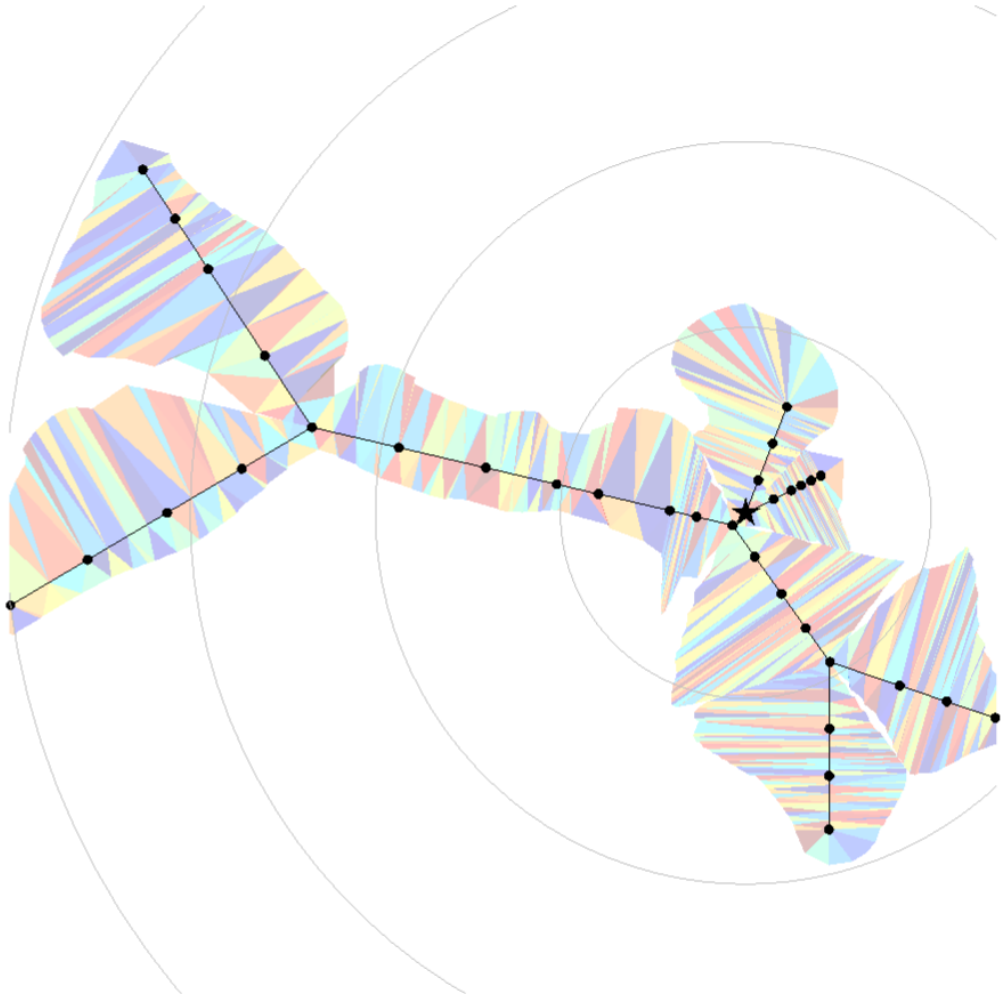
Tesselated Input Map



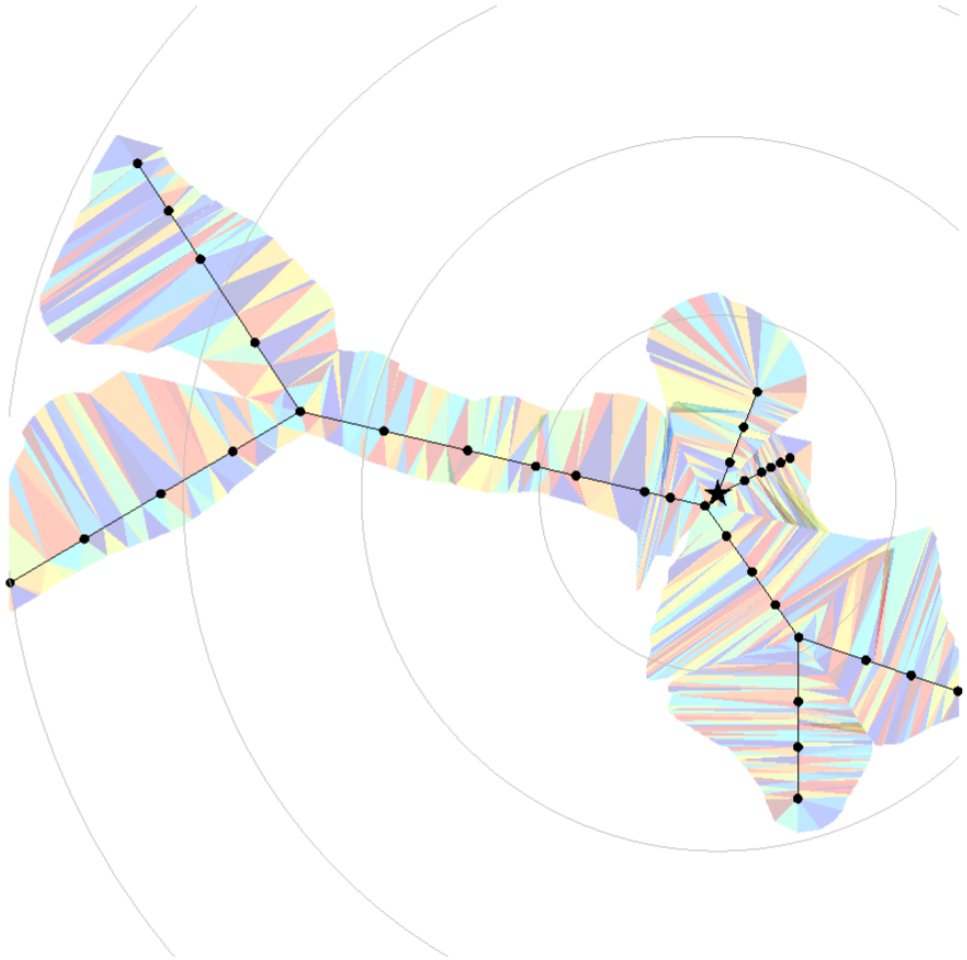
Parametrized Mesh



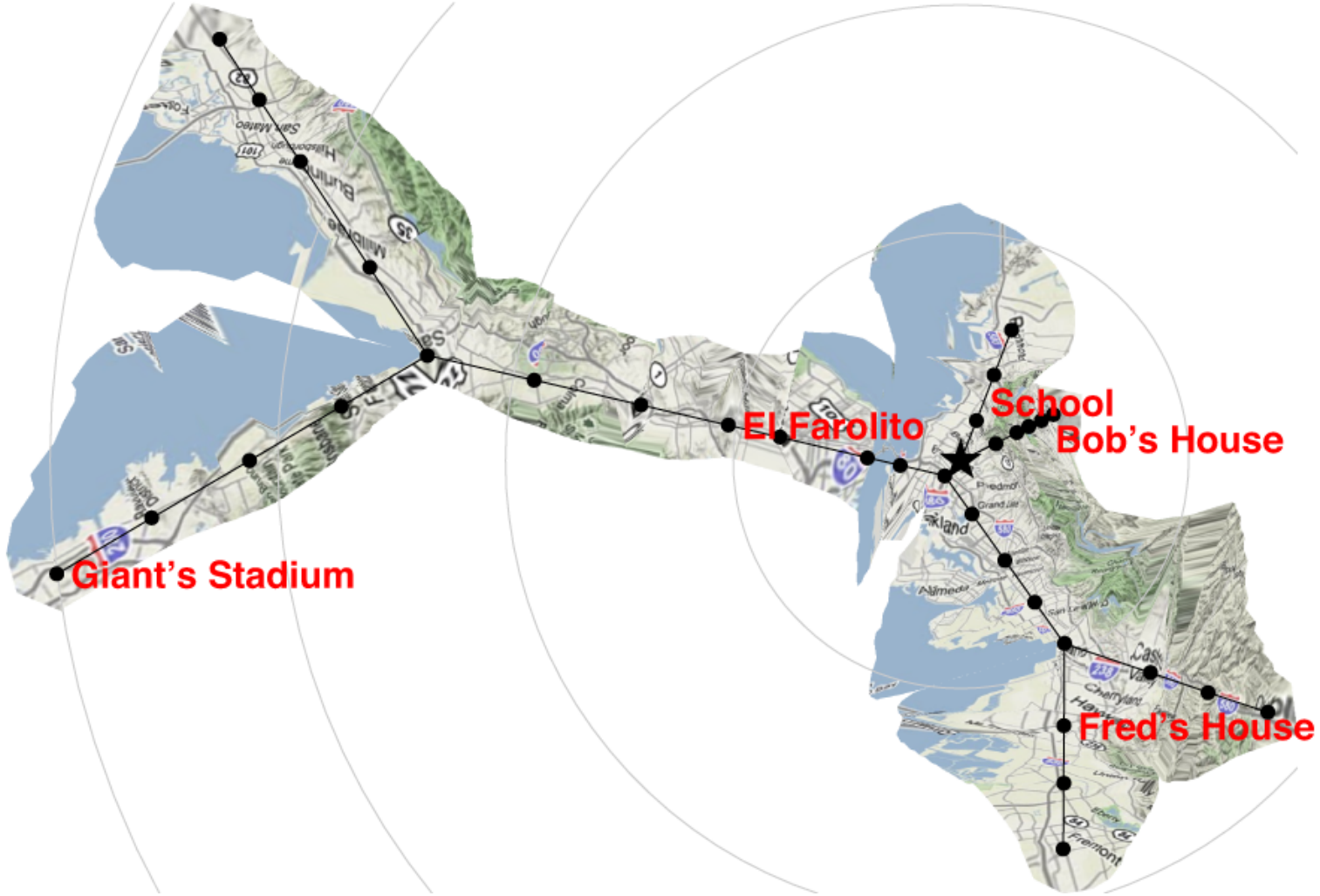
Constrain the Mesh



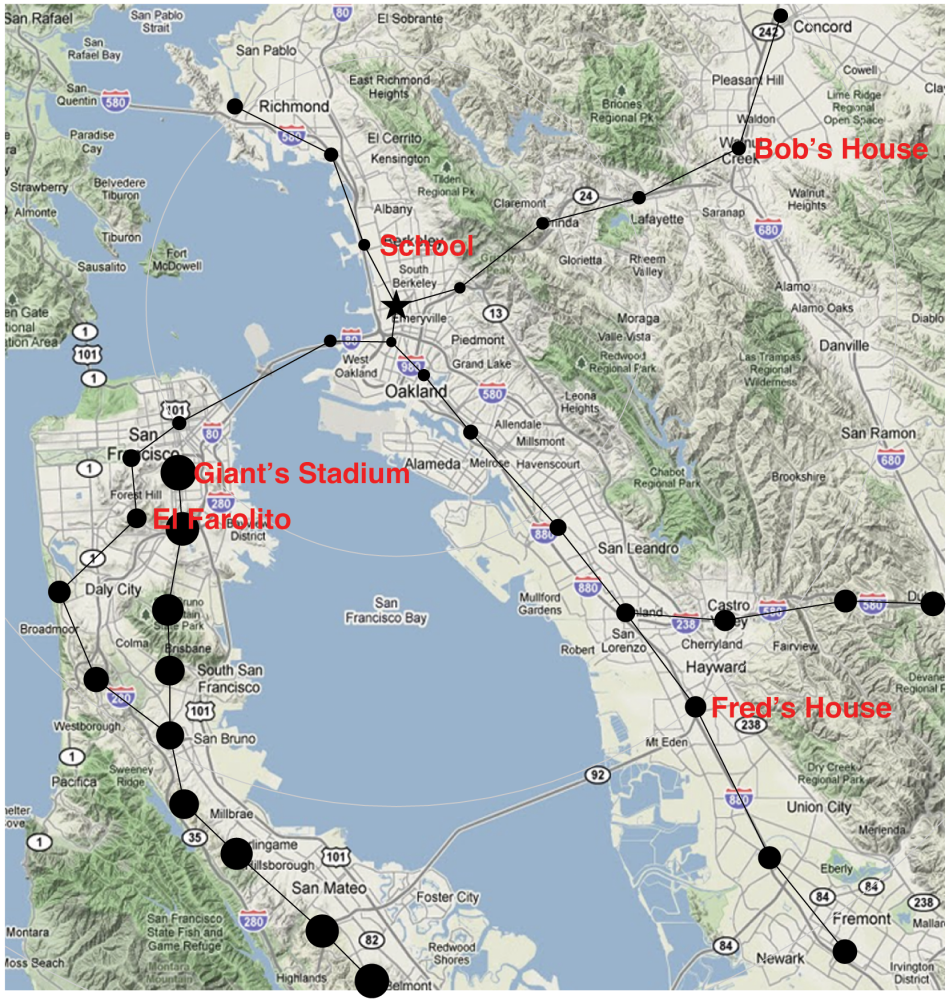
Optimize the Mesh
(Maximize area, minimize perpendicular distortion, jaggedness)

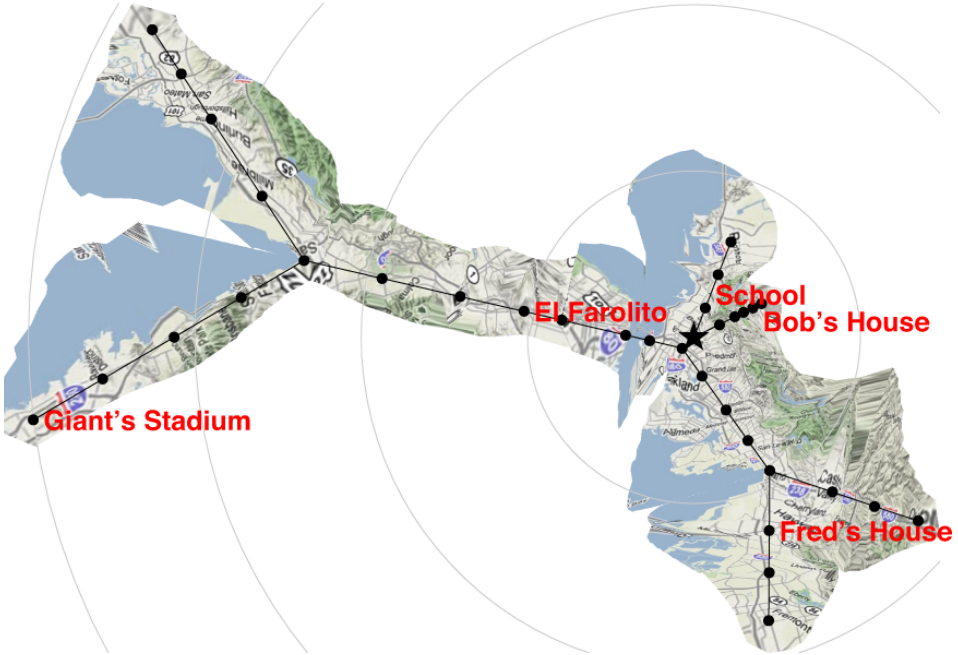


“Sew” the “seams”
(minimize distortion, minimize number of edges)



Warp the image and labels


Bob's House
School
Giant's Stadium
El Farolito
Fred's House


El Farolito
School
Bob's House
Giant's Stadium
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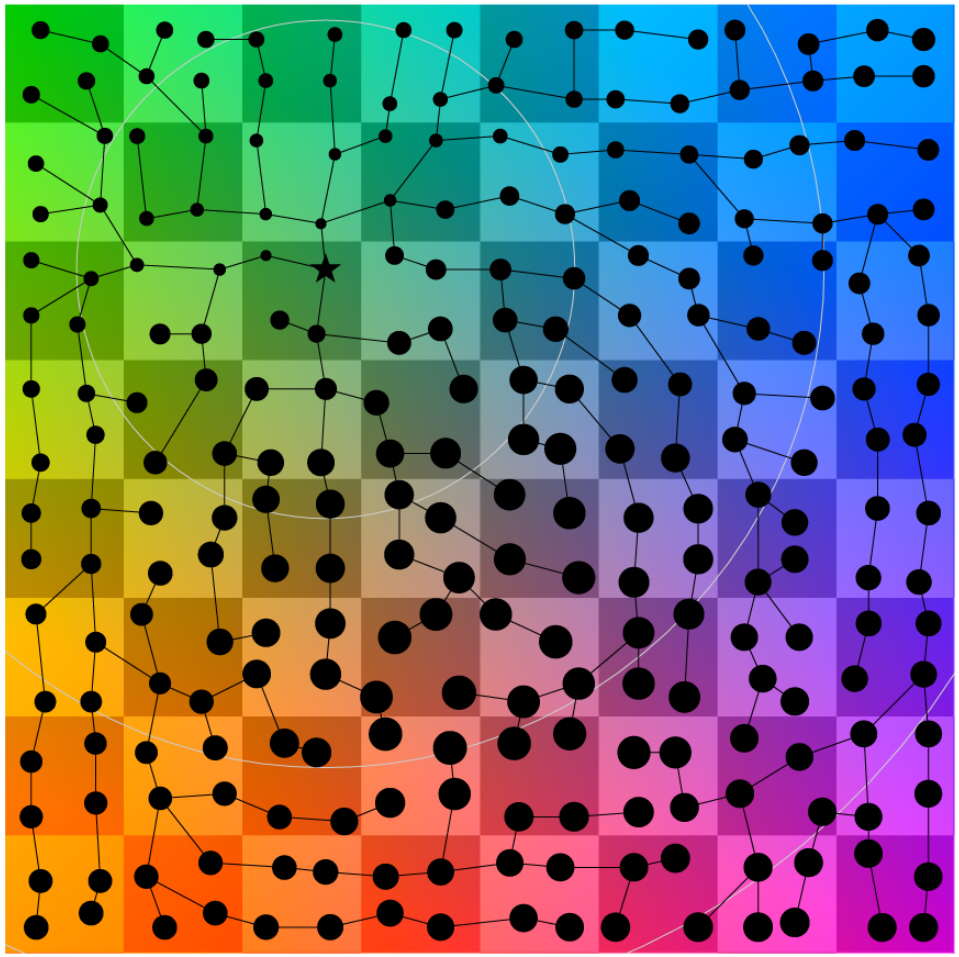

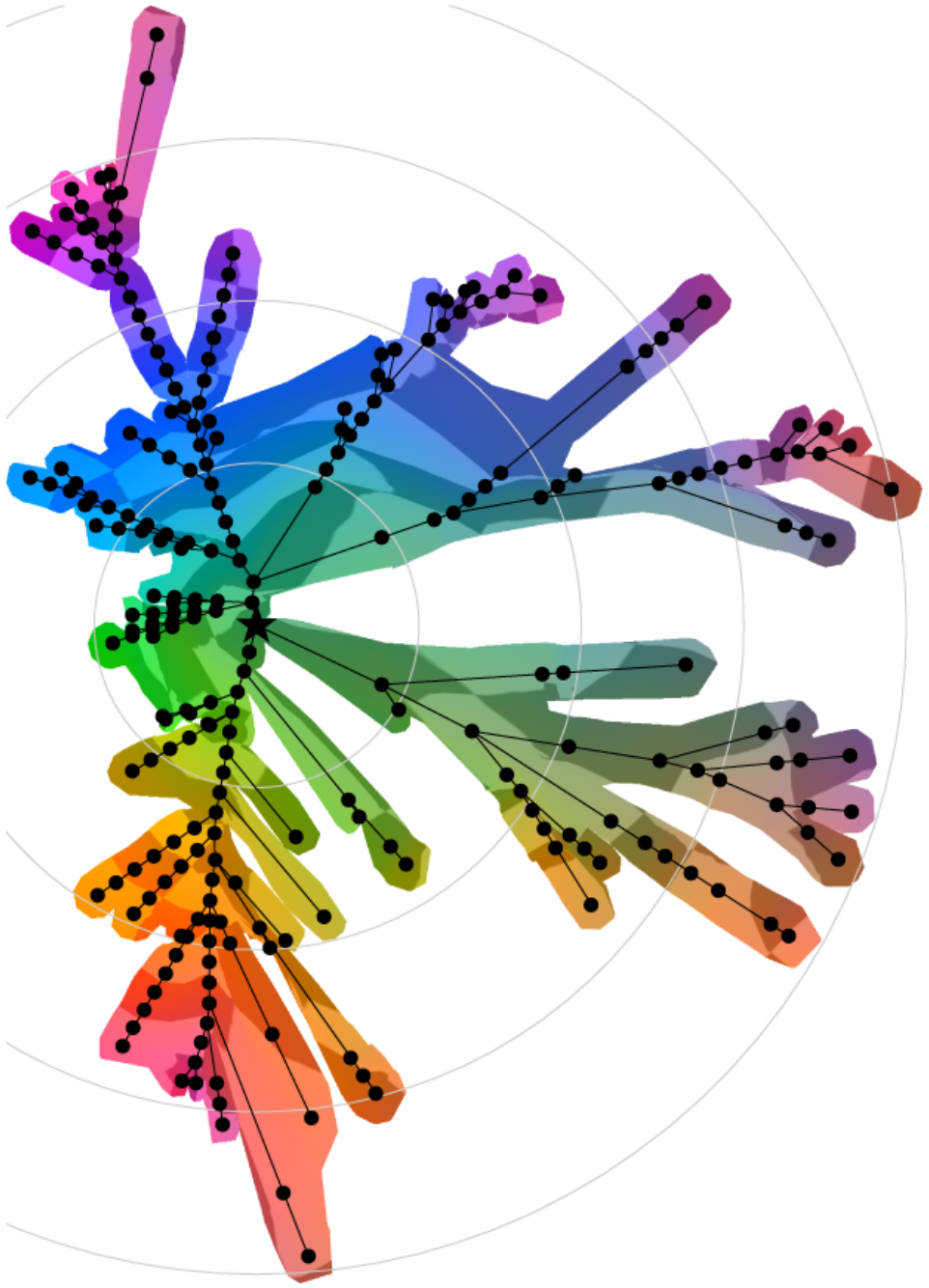

Cons:

- Heavy distortion (that's the point)
- Distances not-on-the-tree are meaningless?
- Difficult to relate to unwarped map, without labels.
- Doesn't work on general graphs
- No notion of what it means to travel *off* the tree.

Pros:

- *Compelling* and *Interesting*
- Easy to compare distances
- Labels seem easy to understand

Future Work?

What does it mean to travel off of the tree?

How many times should every location appear on the warped map? Exactly once?