EDIBLE INFRASTRUCTURE

Organizational Systems for Urban-Agricultural Landscapes

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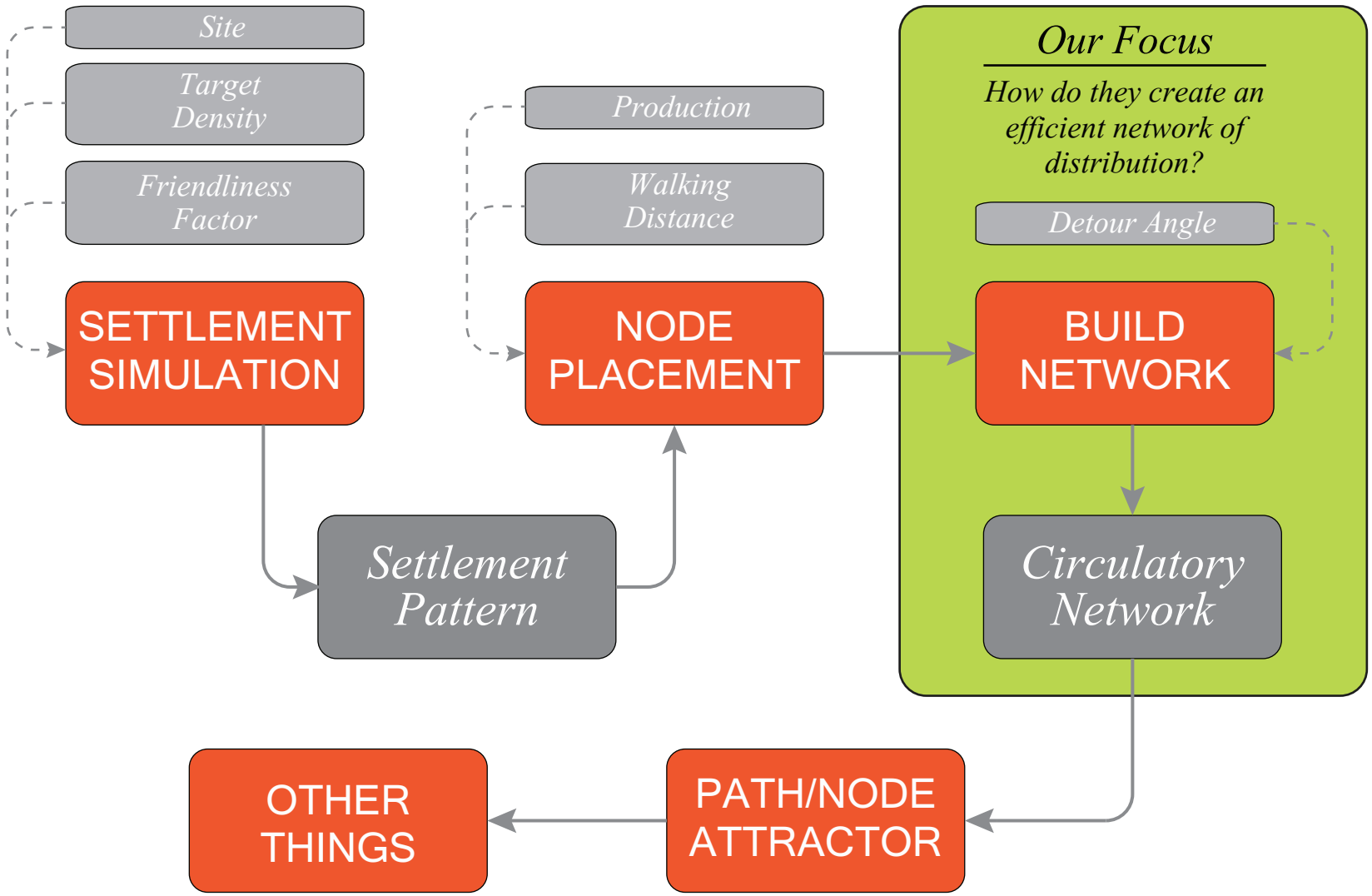
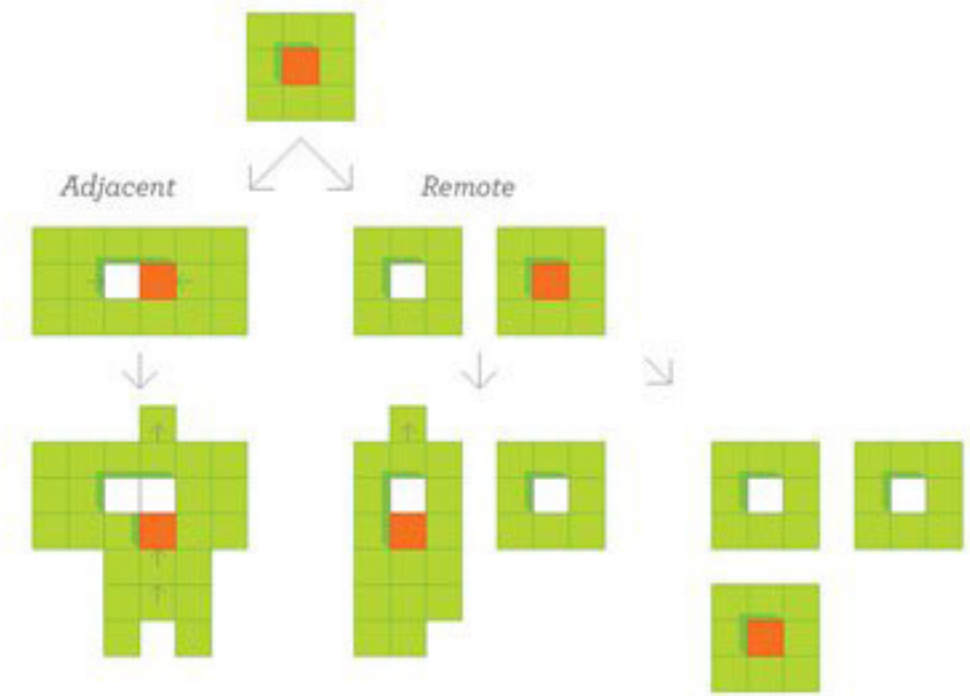
AA London

Recreation attempted by: Garrett Watkins, Tom Adamson, & Taylor Baek

Introduction:



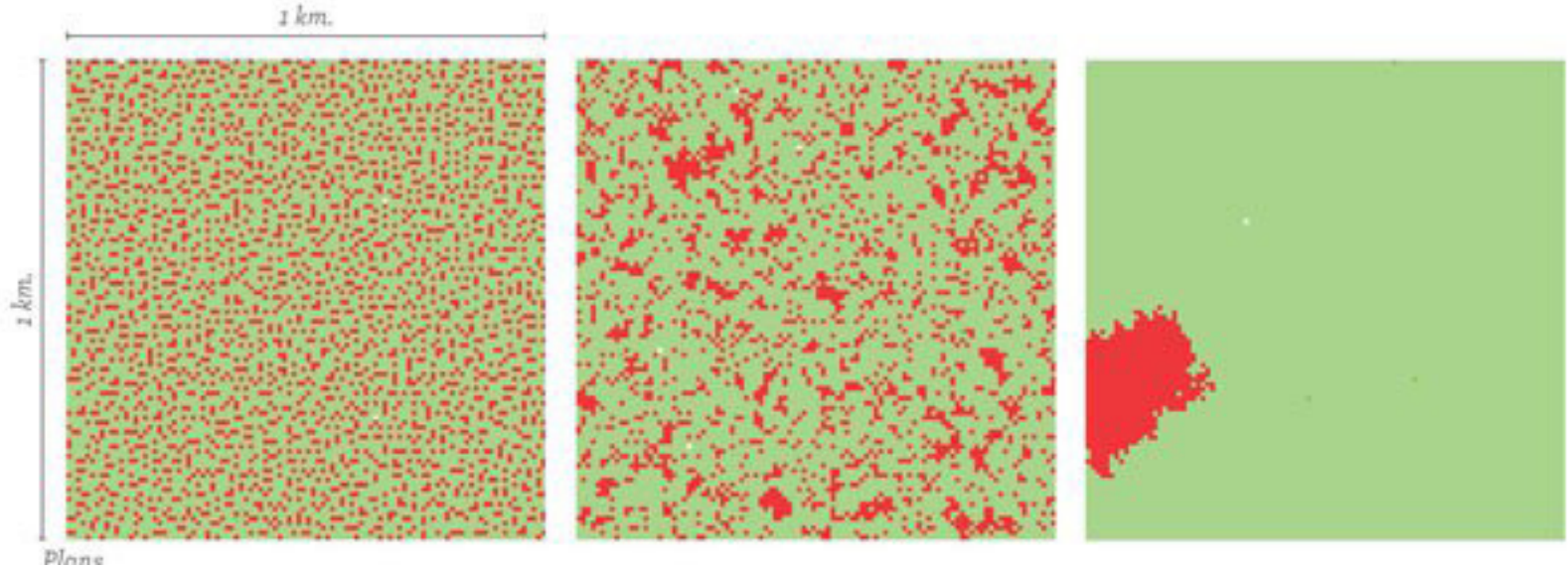
Settlement Simulation:



1st Settler puts down dwelling and farms around it

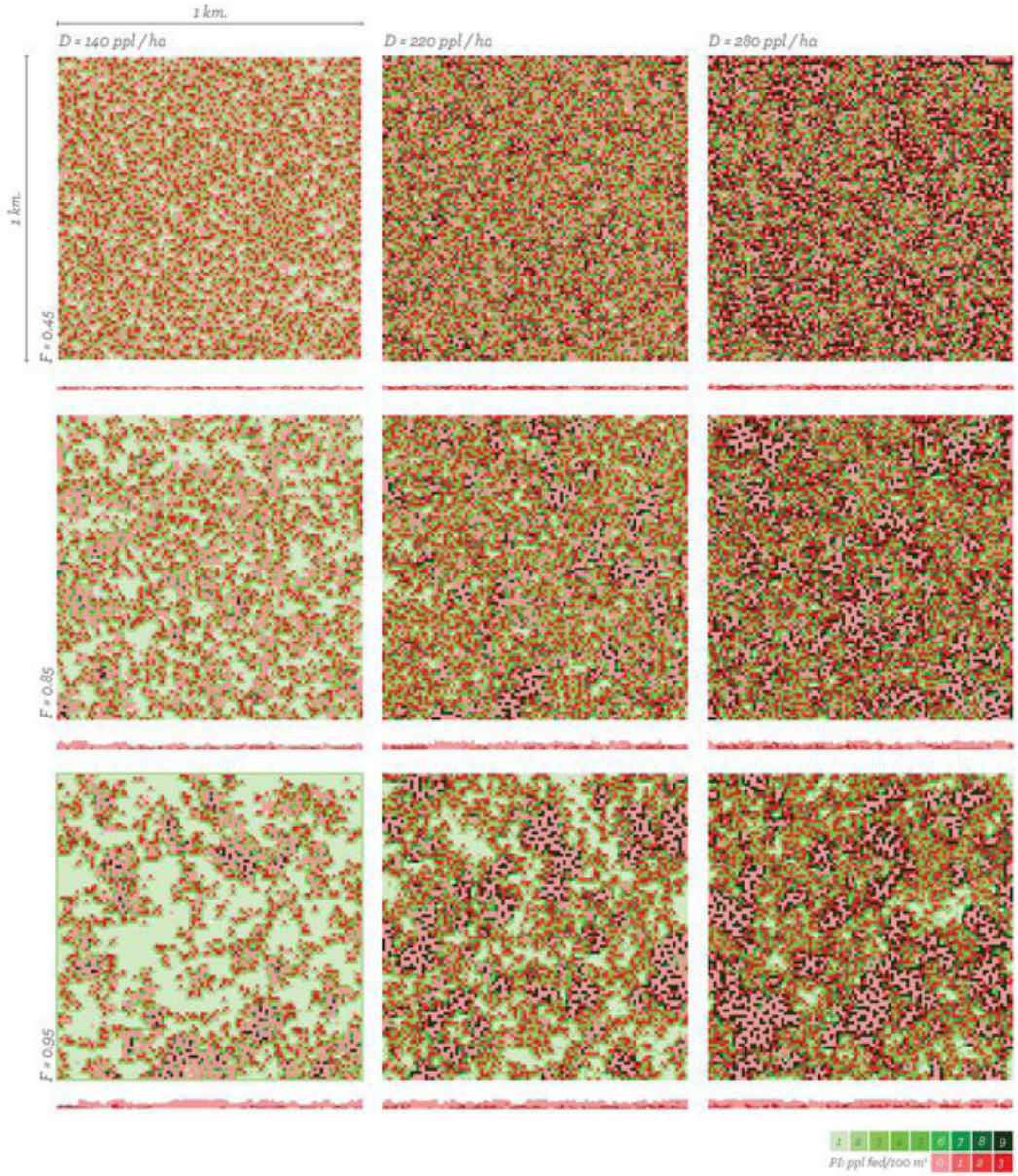
2nd chooses to build adjacent to first or remote

When a built unit replaces a farm, the farm must be relocated to next nearest undeveloped cell.



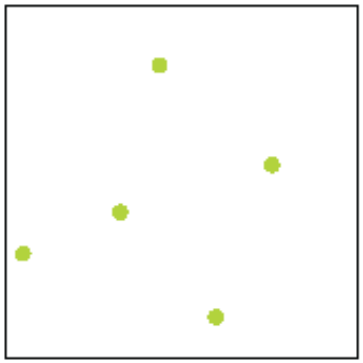
Plans

Node Placement:



Wholesale Nodes:

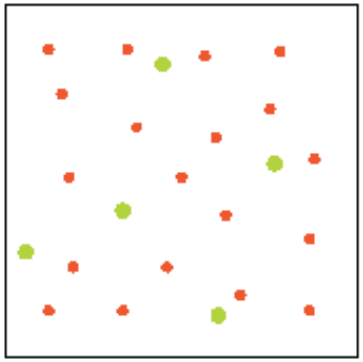
2ha. Production Min.



Retail Nodes:

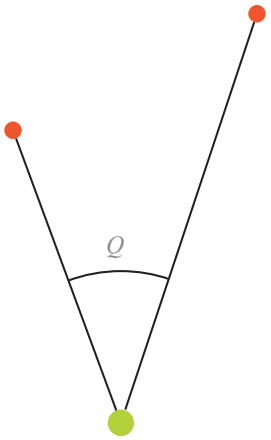
1 Minute Walk

Network:

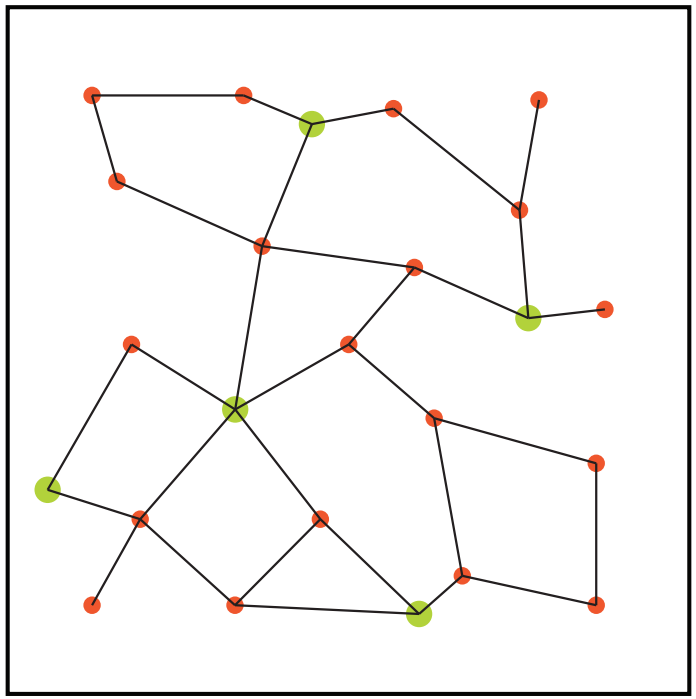


Productive Networks:

Dispatch Angle: Q

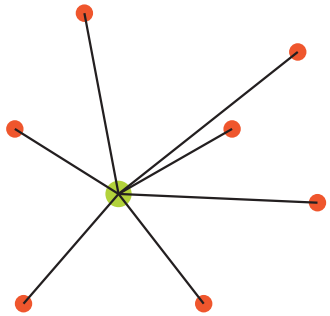


Emergent Network:

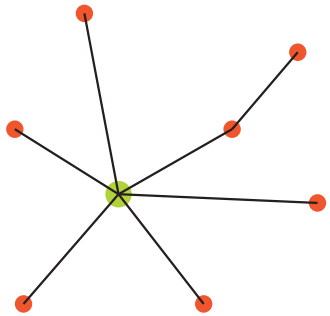


Network Trees:

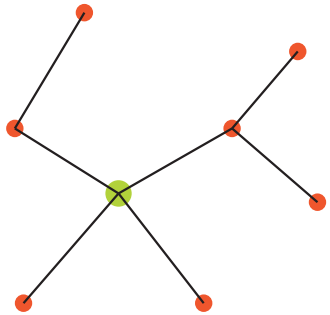
Q = 0.0



Q = 20



Q = 45

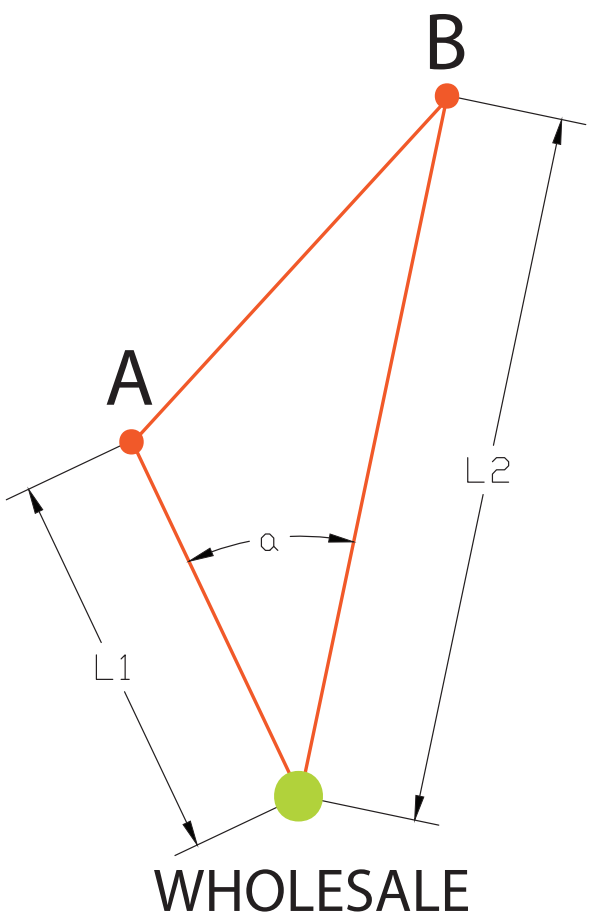


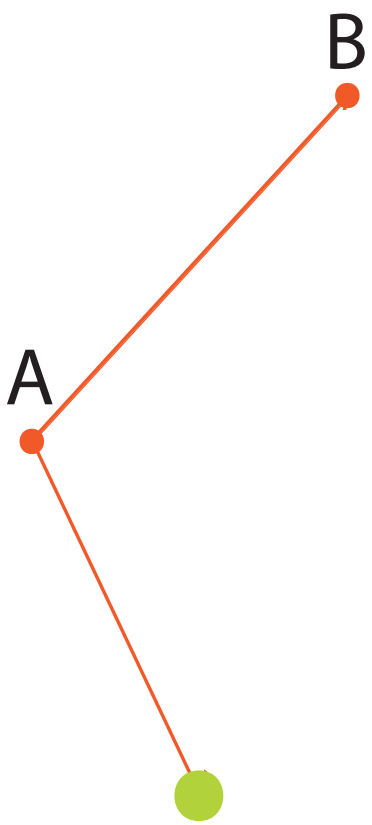
Sorta-Productive Network:

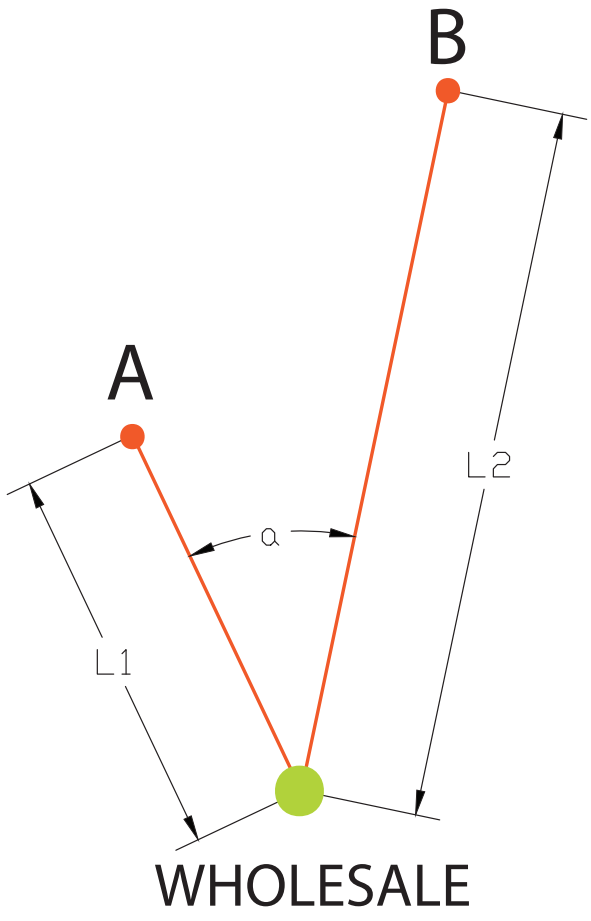
- Our objective in the grasshopper is to create system to calculate most efficient network from wholesale to retails. In order to achieve our goal, our system had to satisfy two main goals.
    - Shortest distance from wholesale node always gets connected
    - If the angle from point A to B is less than assigned angle, the point A and B will be connected through closest point.
        - Angle of AB is greater than assigned angle = A and B gets connected individually from wholesale point
        - Angle of AB is less than assigned angle = A and B are connected together

- How we solved it
    - Created three basic points (wholesale, two retail points(A,B))
    - Create individual line connecting both point A, B to wholesale point
    - Create angle component that measures angle generated from lines connecting A and B
    - Create slider with radians(to compute in angles instead of π) to change assigned angle
    - Create 'Larger than,' 'Smaller than'
    - Plug both angles and sliders to 'Larger than,' 'Smaller than'
    - Create 'cull' which deletes the element
    - Plug 'cull' into "true" value(the angle between A and B is larger than the assigned angle)
    - **Now, what do we do if the angle between A and B is smaller than the assigned angle?**
    - Create individual line connecting both point A, B to wholesale point
    - Create distance(measuring distance between wholesale to A verses wholesale to B)
    - Create 'Larger than,' 'Smaller than'
    - If A is farther than B, the line connecting A and wholesale gets 'culled'(vice versa)

Sorta-Productive Network:

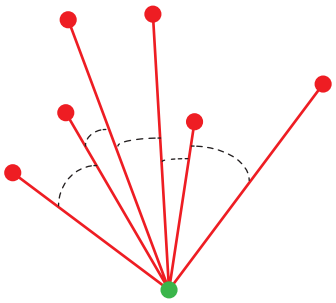






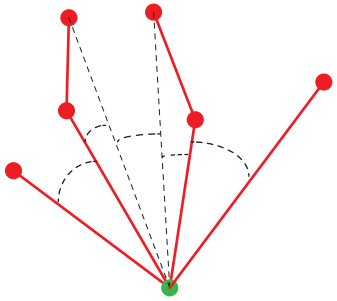
Larger City Network:

How do we apply this technique when multiple retail nodes exist?



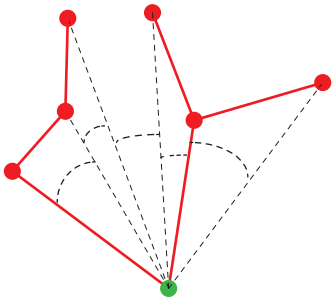
threshold angle = 0

vs.

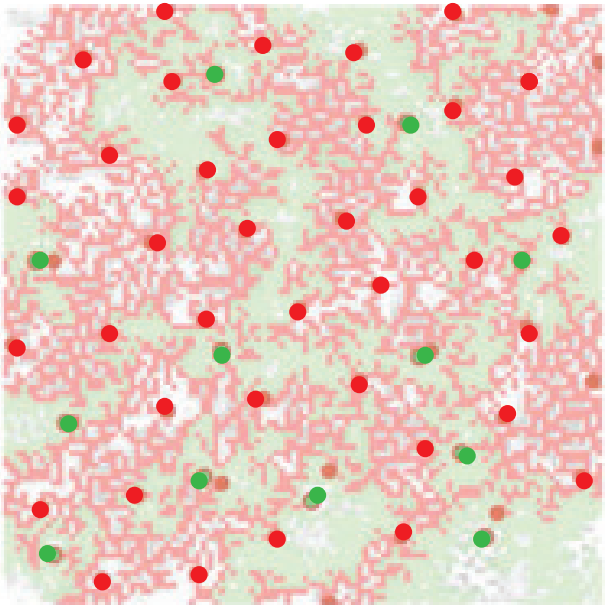


threshold angle = x

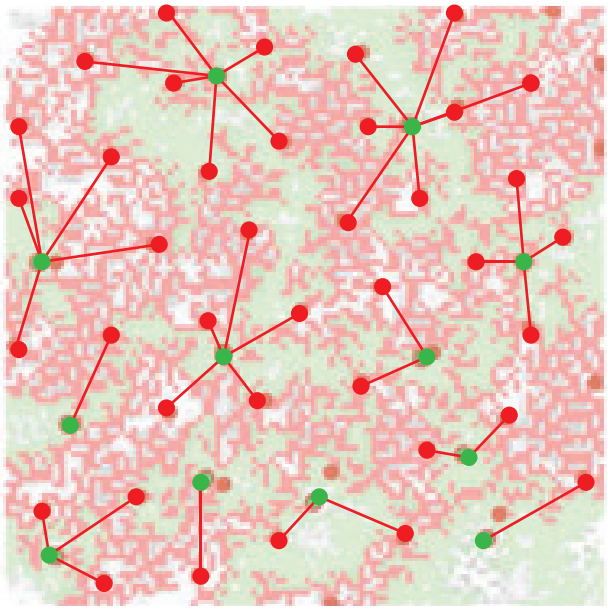
vs.



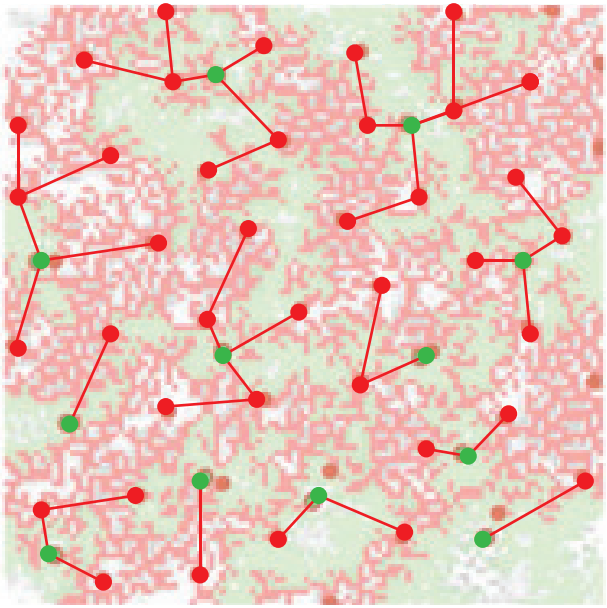
threshold angle > x



before network connections



threshold angle = 0

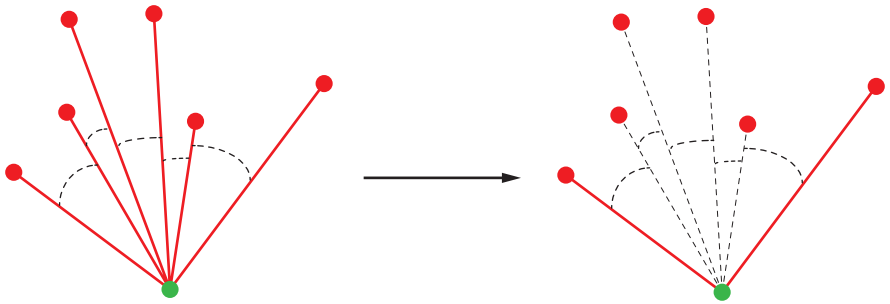


threshold angle > x

Larger City Network:

Step one:

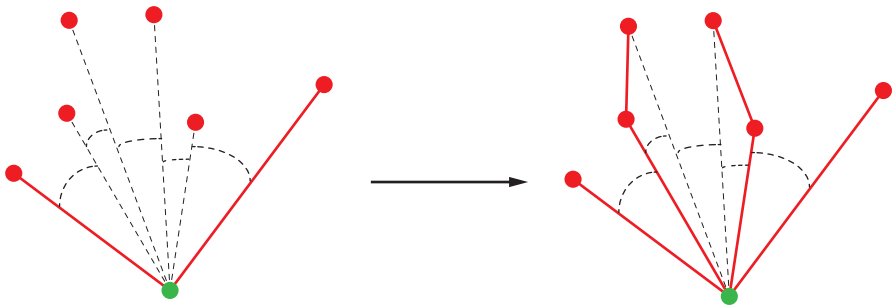
Eliminate direct lines to retail nodes when angle between paths is greater than determined threshold



_create line between retail nodes and wholesale node
_graft angles between each line_creates angle tree
_if larger than (threshold angle), then...cull line to retail
_if smaller than (threshold angle), then...apply next step

Step two:

Re-establish connections through closet point to the wholesale node



_if smaller than (threshold angle), then...do not cull
_determine closet point to wholesale
_connect closer point to wholesale with line
_connect farther point(s) to wholesale through closest retail

Conclusion:

Edible Infrastructure

The Rest of the Project:

Determine size and program capacity of largest nodes

- *Number of connections*
- *Relative density*

Overlay separate walking path circulatory network

- *Connected Green Space*

Gather geometry around paths and nodes

- *Hybrid typologies*
- *Increased production strategies*

Test simulation on real area: New York

Lessons Learned

Bottom Up design strategy

Emergent network of infrastructure balancing human decisions with logical efficiency.

Logic in Grasshopper

Visualizing and implementing if/then as well as and/or statements to effectively manipulate data points.

What's Left

Finish the definition

Simply finishing this definition to include multiple points would be greatly satisfying and a good way to get a handle on "grafting"