DIY Cartography: Network Maps and Case Study Research

ADN592/ARC590: DIY Cartography
February 24, 2016
Based on the maps and annotations from project #1, **write down a single research question** that is at the core of your interests and findings.

**What sort of data have you already collected? Quantitative and/or qualitative?**

**What other maps from Project #1 could you overlay on top of yours to gain more insight into this topic?**
Share research questions.

Ex: How was the railroad developed in Raleigh?

Can you visualize how you would go about collecting information on that topic? What type of quantitative information might you collect? What about qualitative?
Revise Research Question.

Ex: How did politics affect the development of the railroad in early Raleigh?

Can you visualize more specifically how you might go about collecting information related to this question?
Project #2: Network Maps and Case Study Research.

For this project, you are going to create a network of relationships regarding Raleigh’s development. This can be both historical and contemporary.

You should be more specific in your study and in your content. Within each person’s research, this level of specificity will vary.
The range and scope of the information will also vary according to the topic of research. The goal of this project is to look deeply into something that has contributed meaningfully to Raleigh’s growth — politically, socially, economically, physically or naturally.
Categorizing Relationships

In the Chapter on Spatial Maps, Mereilles identifies three basic methods for organizing information.

- Nominal (A is different from B)
- Ordinal (A is bigger than B)
- Quantitative (A = 50; B = 25)
Ordinal

Democrat

Republican
Relational

Democrat

Republican

2,000
FiveThirtyEight
2012 Forecast

The latest FiveThirtyEight forecast shows many states shifting to the right. Florida, North Carolina and Indiana are more likely than not to shift back to Republicans.

As Goes Ohio
Ohio, which has voted for the winner in every election since 1964, provided the decisive electoral votes in 2004, and it is the state likeliest to play that role again this year, according to the FiveThirtyEight model.

Incumbent Stability
When an incumbent runs for re-election, fewer states typically...
Crazy market bubbles

The visualisation explores the main speculative "bubbles" from the 15th Century to the present, demonstrating their true economic impact.

How to read it?

The 3 phases of a market bubble: A. Accumulation, moderate rise with stock increase; B. Bubble, exponential growth of the stock/price in virtue of new capital or of externalities in the reference market; C. Burst, fall of the stock/price, loss of invested capital, collapse of the volumes of the reference market.
European banks and government debt

The visualization compares the sovereign debt exposure of sixty-one European banks to the twenty-nine nations of the old continent. Each bank is positioned on the perpendicular according to the country of origin and from the bottom upwards, based on the year of foundation (Monte dei Paschi being the oldest). The flow and quality of debt investment in the various states is displayed for each bank. The countries are arranged from left to right according to the internal relationship between public debt and GDP, and from the bottom upwards based on the growing number of inhabitants.

Sources: The Guardian, Eurozona (Un), Business Week.
The data refers to the years 2011 and 2012.

How to read it?

vertical lines = bank that invests in the state to which they belong

horizontal lines = bank that invests in the state to which they belong

deposition = public debt

shaps of public debt purchased by the banks

top name = bank name

top name (up to) = name in Italian

top name (up to) = name in English

date of bank foundation

country

Giorgia Lupi, accurat.it
The Beatles: Working Schedule 1963 - 1966

Based on your research question, what are some categories that you would start to ascribe to these topics (nominal)?

What hierarchy / difference in importance might you ascribe (ordinal)?

Is there any quantitative data (or numbers) that you might find? What is that?
Look at the list.

Take a look at the historical events that we have assembled for you.

*How are they aligned with the categories and hierarchies that you just identified?*

*How are other events aligned?*
Case Study Research

This entire class is essentially using case study research. *Why would we say that?*

Crouch and Pearce outline 3 types of case study research:

- Intrinsic
- Instrumental
- Collective
**Intrinsic:** Trying to understand a very specific case more deeply. Intent not to generalize from the case but to understand the particularities of the case better.
**Instrumental:** Trying to understand something outside of the case by looking at a particular phenomenon within the case itself. Helping us understand something about a topic by looking at a case that is similar or different from the phenomena.
Collective: Intention is to explore “different aspects of the same issue” by studying a series of cases.
Triangulation and Mixed Methods

Why are these used often in case study research?

Why would they be of particular benefit in this research type/scope?
For next week:

Do 3 schematic maps using line weight, scale, color that use these categories, hierarchies, numbers to explore different relationships between sets of information.

Based on your research question/topic—overlay another series of Project 01 maps with yours to uncover intersections that might form the basis of your project 02 network.
In 1736, Euler proved that the path didn’t exist. The path would have been represented as a graph, with nodes that except for two, should have exactly two edges. This path was the start of the path starting.

**BASIC ELEMENTS**

Networks are often used to model the structure, or connectivity, of a system. Mathematics provides a powerful tool for representing and analyzing networks, capturing only the essential information, abstracting away all but the system's

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Mereilles, p49
most common types of network layouts

**LINEAR:**
Nodes are organized linearly and the links are usually arcs connecting nodes.
Con: It's hard to identify clusters and is only feasible for small datasets.

**FORCE DIRECTED:**
There are many algorithms that use an iterative process to locate nodes according to physical forces.
Con: There are too many node occlusions and link crossings in dense areas.

**CIRCULAR:**
Nodes are organized around the circumference and usually grouped by categories. Links cross the circle and are usually bundled so as to simplify the crossings.
Con: It's hard to identify clusters.

**COMMUNITY STRUCTURE:**
The focus is on community structures.

**GEOGRAPHY BASED:**
Spatial location of a node is provided by its geo position.

**MATRIX:**
Grid of nodes with link information positioned within the cell.

**SANKEY TYPE DIAGRAMS:**
Nodes are organized vertically and the links horizontally.

**FORCE DIRECTED:**
Force directed graphs centered on a node.

**POLAR OR RADIAL:**
Nodes are organized around a central node, with their position related to the number of hops it takes to reach it.

**RADIAL COMMUNITY STRUCTURE:**
Nodes are organized around a central community.

Like Galileo's telescope (1564–1642), Hooke's microscope (1635–1703), or Roentgen's x-rays (1845–1923), new information analysis tools are creating visualizations of never before seen structures. Jupiter's moon, plant cells, and the skeletons of living creatures were all revealed by previous technologies. Today, new network science concepts and analysis tools are making isolated groups, influential participants, and community structures visible in ways never before possible.

Ben Shneiderman