Social Networks

CPSC 533c Presentation

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Social Networks?

From Wikipedia:
(http://en.wikipedia.org/wiki/Social_network)

"A social network is a social structure between actors, mostly individuals or organizations. It indicates the ways in which they are connected through various social familiarities ranging from casual acquaintance to close familial bonds.

. . .

Social networking also refers to a category of Internet applications to help connect friends, business partners, or other individuals together using a variety of tools."

Social Networks

- **Visualizing Social Networks**. Linton C. Freeman, Journal of Social Structure, 1, 2000, (1).
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Visualizing Social Networks

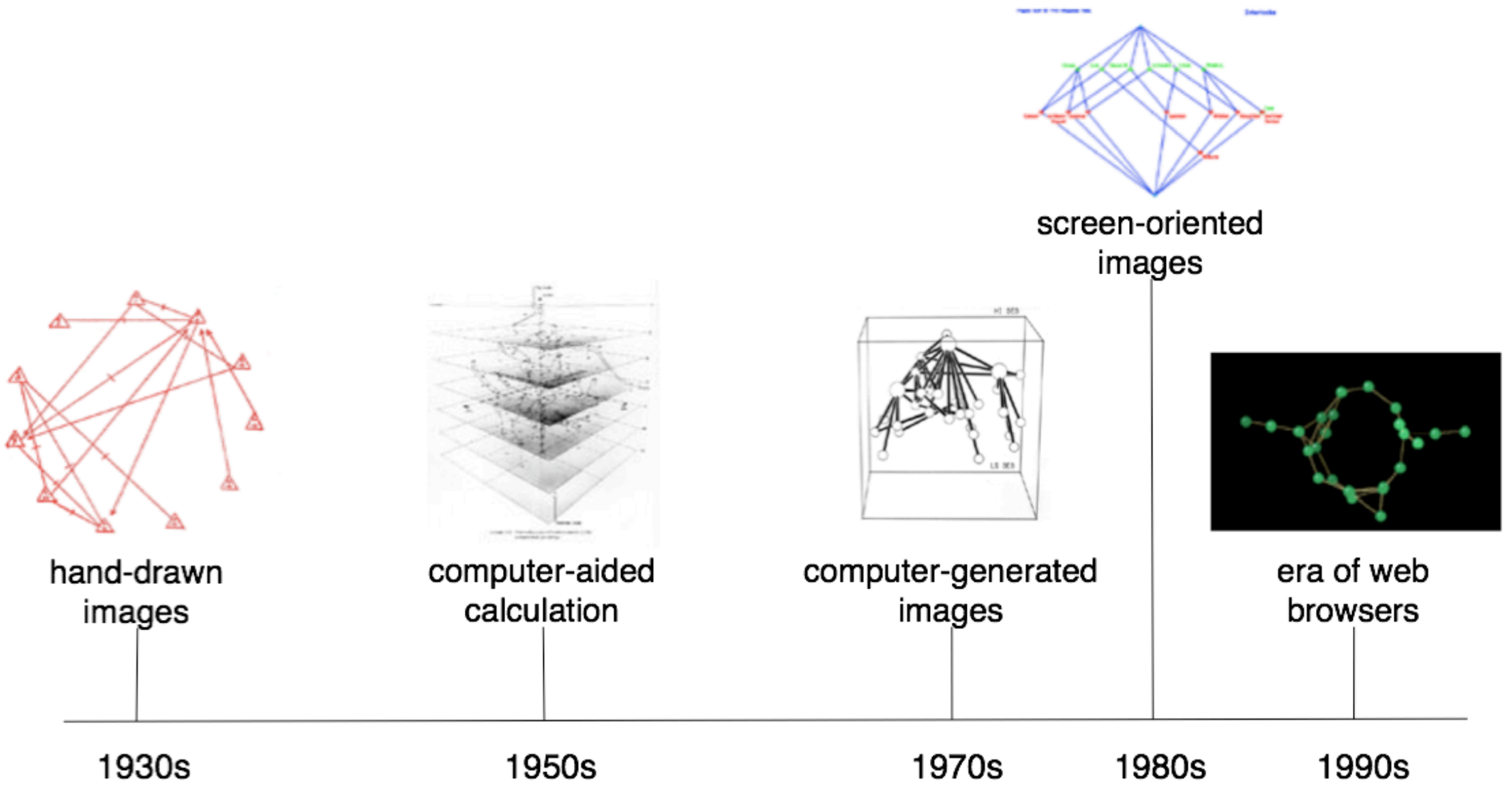
- Social network researchers have been using visualization for years!
- Why?
  - Provide insight into network structures
  - Communicate these insights to other
- How?
  - Matrices
  - Points and lines

Visualizing Social Networks (Freeman)

Visualizing Social Networks

- Want to uncover two types of patterns:
  - social groups
  - social positions

Point and line displays of social networks



Visualizing Social Networks (Freeman)

Hand-Drawn Images in Social Network Analysis

- Moreno
  - graphs
  - directed graphs
  - use of colour
  - varying shape of points
  - varying location to stress important structural features of data (spatial positioning!)

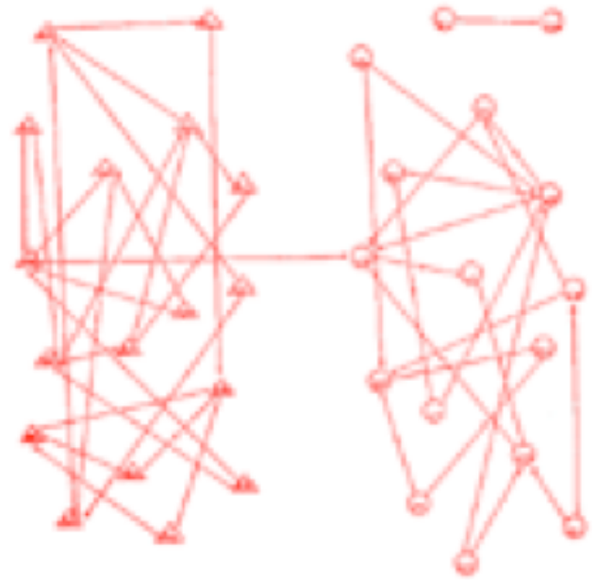


Figure 3. Friendship Choices Among Fourth Graders (from Moreno, 1934, p. 38).

Visualizing Social Networks (Freeman)

Hand-Drawn Images in Social Network Analysis

- Lundberg & Steele
  - "Nuclei" of network as indication of high sociometric status

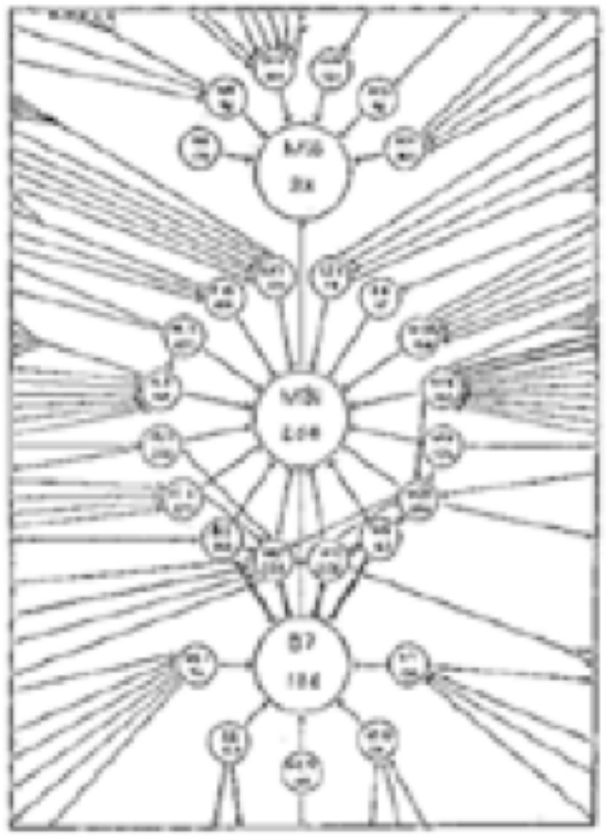


Figure 9. The "Lady Bountiful."

Visualizing Social Networks (Freeman)

Hand-Drawn Images in Social Network Analysis

- Northway
  - target sociogram

Figure 12. Grant's Drawing of a Target Sociogram of a First Grade Class (from Northway, 1952).

  - target sociogram board

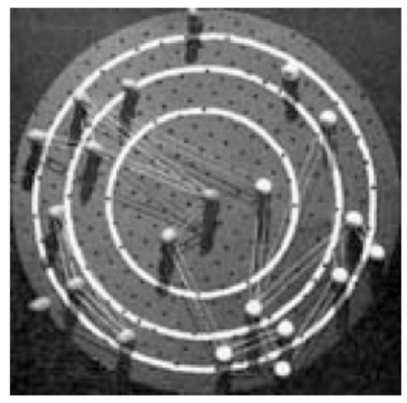


Figure 13. McKenzie's Target Sociogram Board (from Northway, 1952).

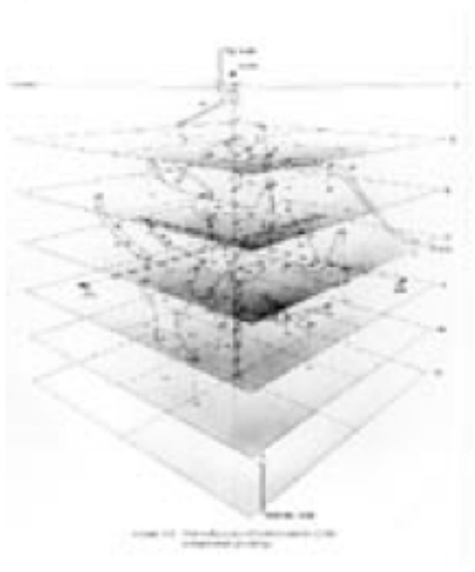
Visualizing Social Networks (Freeman)

Point and Line Images Grounded in Computation

- Determining locations for points
  - Factor analysis (Proctor, Bock & Husain)
    - computed manually
    - very cumbersome
    - provided standardized methods - made duplication possible

Point and Line Images Grounded in Computation

- Determining locations for points
  - Multidimensional scaling (Laumann & Guttman)
    - computers are now available, so more elaborate computation possible



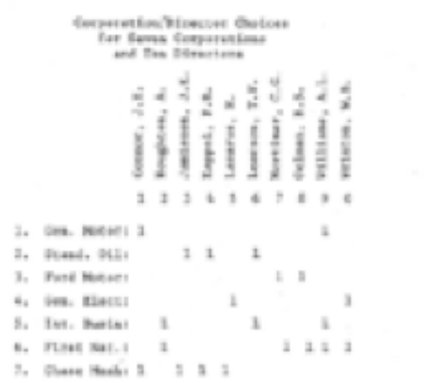


Figure 16. Clusters of Occupations. Figure 17. Links between Corporations and Corporate Directors.

Visualizing Social Networks (Freeman)

Point and Line Images Grounded in Computation

- Determining locations for points
  - Correspondence Analysis (Levine)
    - tool for locating points in two mode network data (columns and row refer to different objects)

- Still no computer-drawn images!

Computer-Generated Point and Line Images

- Several applications developed to output social network data on plotters

Figure 19. Alba and Kadushin's Image of Contacts among Intellectual Elites.

Figure 20. ORTEP Rendition of the Data of Figures 9 and 10.

Screen-Oriented Point and Line Images

- Finally! Displaying images on monitors!
  - Personal computers becoming more common
- Many applications for displaying/exploring social network data, though some need special hardware (SGI)

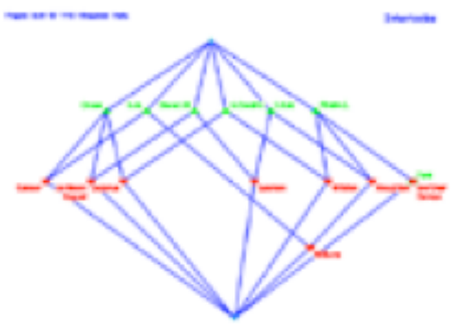


Figure 22. The Data of Figure 17 Displayed as a Galois Lattice.

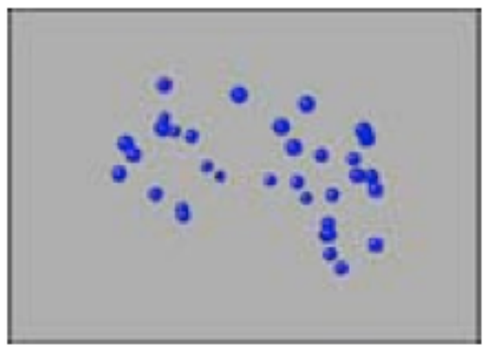


Figure 23. Dynamics of the Freeman and Freeman Data.

Visualizing Social Networks (Freeman)

Network Images in the Era of Web Browsers

- Researchers displaying/sharing social networks on the web (NOT Friendster)
- Early efforts use Java and VRML

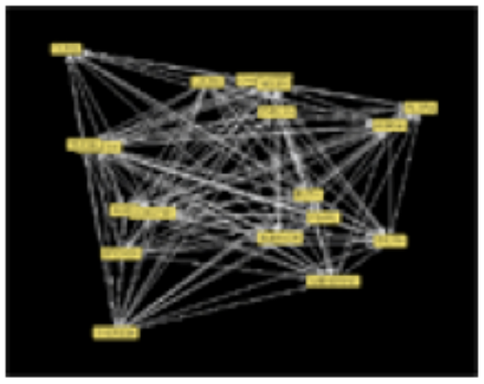


Figure 30A. JAVA Image of Spring Embedding the Data Displayed in Figure 28.

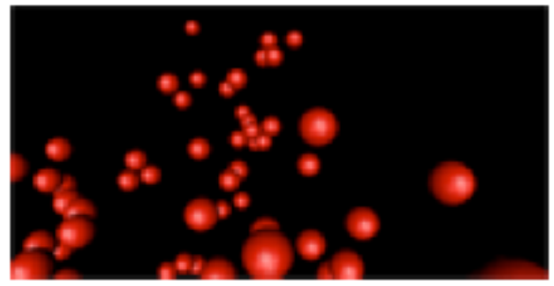


Figure 31A. VRML Image of Webster's Australian Friendship Data.

Summary

- Presents an interesting history of social network visualization
  - Movement from ad hoc image drawing to standardized computerized procedures
  - Social network researchers recognized the importance of visualization long before it became a hot topic

Summary

- Pros
  - Gives a good overview of the topic
  - Ideas are presented logically and clearly
- Cons
  - Slightly dated (2000) - What is happening in the field now?

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Visualizing Online Social Networks

- Online social networks are cool!
- Let's visualize them!

Vizster: Visualizing Social Networks (Heer & boyd)

Articulated Online Social Networks

- Started to explode around 2003 (Friendster, Tribe, Orkut, etc.)
- People use them for social exploration and play

Vizster: Visualizing Social Networks (Heer & boyd)

Why Visualize Online Social Networks?

- Sometime difficult to understand the network beyond your "friends"
- Want to facilitate discovery and increased awareness
- Must include profile data as it helps users get a sense of each person

Vizster

- video demo

Vizster: Visualizing Social Networks (Heer & boyd)

Vizster

- Spring-embedding algorithm
- Exploration via:
  - connectivity highlighting
  - linkage views
  - search
  - x-ray mode
  - community structures

Vizster: Visualizing Social Networks (Heer & boyd)

Vizster

- software demo

Vizster: Visualizing Social Networks (Heer & boyd)

Vizster "User Study"

- Observed use in large party situation (terminal + projection on wall) and in small group in lab
- Found to be both useful and conducive to social interaction (playing "games" to find people, exploring together)
- "Friendster gives you two hours of fun, this doubles it"

Summary

- Pros
  - Employs established InfoVis methods (highlighting, pan & zoom, colour, etc.) to help users explore social networks
  - Can help users more easily find information about the network
  - It looks cool!

Summary

- Cons
  - Currently, have to mine data ahead from time
  - How much time will people really spend using this?
  - Who really uses Friendster anyhow? Is the "cool" factor enough, or do we want real world applications?

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