SOCIAL NETWORK VISUALIZATION

0747301 CEMIL SEKER

The Selected Papers

1.Vizster: Visualizing Online Social Networks

Jeffrey Heer and Danah Boyd, InfoVis 2005

2. Visualizing Social Networks

Linton C. Freeman

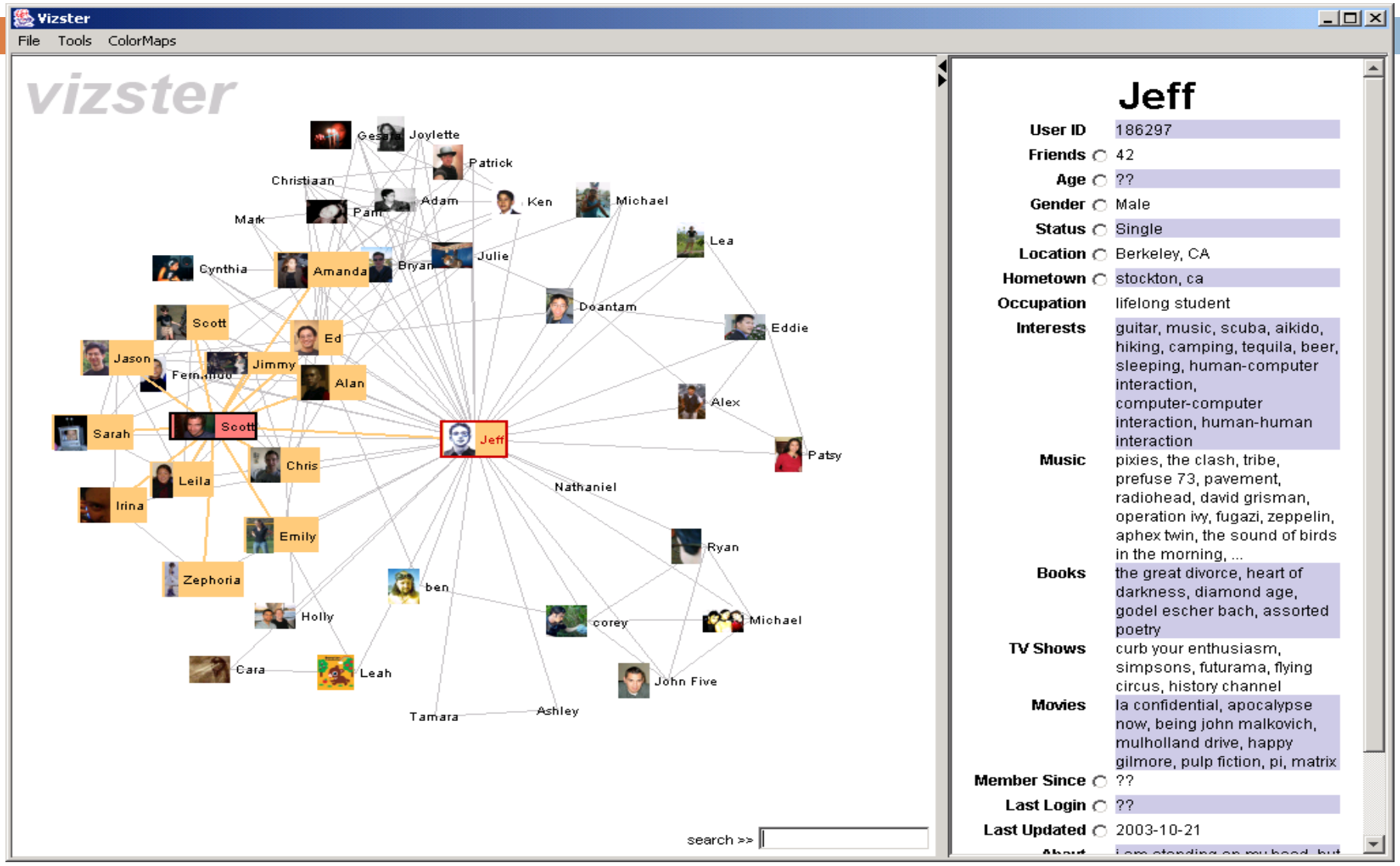
University of California, Irvine

Social Network ???

 .com  .com and etc…

- A social network is a connection among the people
- The number of online social networking services is increasingly growing.

VIZSTER???


Vizster
File
Tools
ColorMaps
vizster
Joylette
Patrick
Christiaan
Adam
Ken
Michael
Mark
Pam
Lea
Julie
Cynthia
Amanda
Bryan
Doantam
Scott
Eddie
Ed
Jason
Jimmy
Alan
Alex
Sarah
Scott
Jeff
Patsy
Chris
Leila
Nathaniel
Irina
Emily
Ryan
Zephoria
ben
Holly
corey
Michael
Cara
Leah
John Five
Tamara
Ashley
search >>
Jeff
User ID 186297
Friends 42
Age ??
Gender Male
Status Single
Location Berkeley, CA
Hometown stockton, ca
Occupation lifelong student
Interests guitar, music, scuba, aikido, hiking, camping, tequila, beer, sleeping, human-computer interaction, computer-computer interaction, human-human interaction
Music pixies, the clash, tribe, prefuse 73, pavement, radiohead, david grisman, operation ivy, fugazi, zeppelin, aphex twin, the sound of birds in the morning, ...
Books the great divorce, heart of darkness, diamond age, godel escher bach, assorted poetry
TV Shows curb your enthusiasm, simpsons, futurama, flying circus, history channel
Movies la confidential, apocalypse now, being john malkovich, mulholland drive, happy gilmore, pulp fiction, pi, matrix
Member Since ??
Last Login ??
Last Updated 2003-10-21

VIZSTER???

- Is a Tool to build a visualization for the users of social network services facilitating discovery of their online community.
- Visualizes social networks with *node-links*.
- The nodes represent members of system
- The links represent friendship between the nodes.

VIZSTER???

- Provides a visual environment for analyzing of social networks
- Is able to make interactive highligting to explore friendship relations
- has following techniques:
  - Interactive search
  - X-ray Mode
  - Panning
  - Zooming
  - Etc…

Force-directed algorithm and layout technique

- Is an algorithm for calculation layouts drawing simple undirected graphs
- Is used in *Vizster*.

The Interactive Visualization in *Vizster*

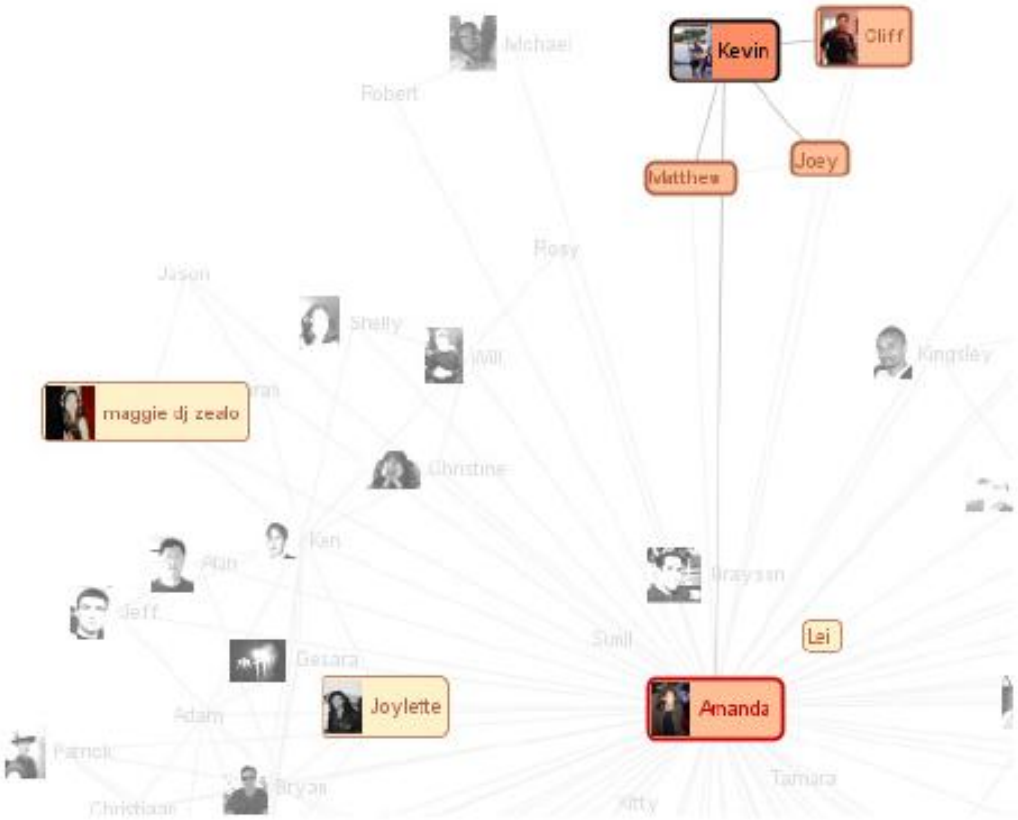
- **Basic Interaction**
- **Exploration: Connectivity Highlighting**
- **Exploration: Linkage Views**
- **Navigation**
- **Search**
- **Attribute Visualization using "X-Ray" mode**

Basic Interaction

- With simple mouse clicks.
- Click of a node to appear the corresponding profile

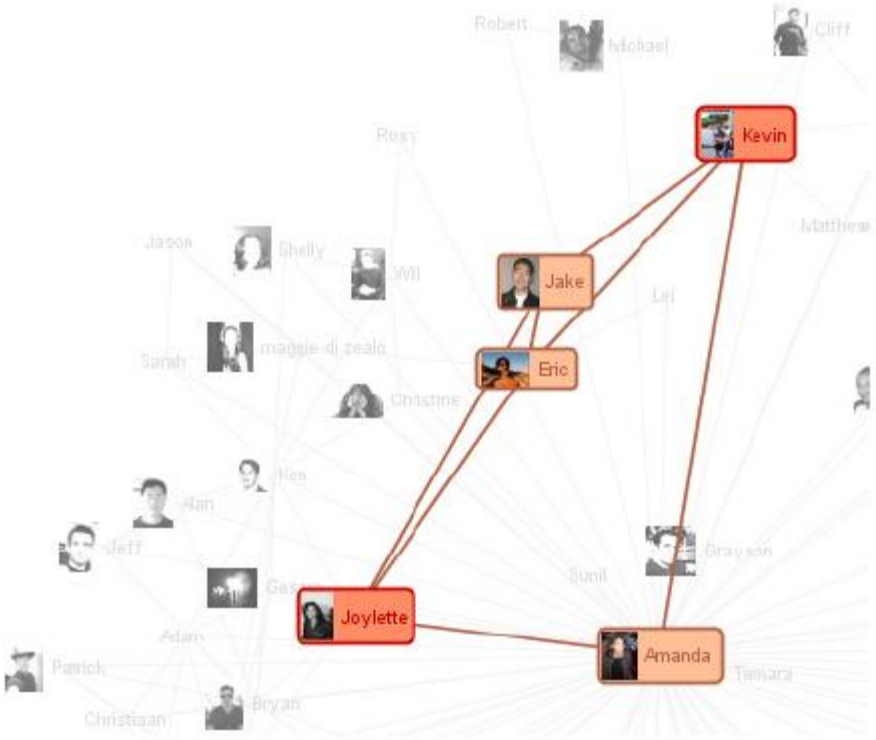
Exploration: Connectiviy Highlighting

- With a mouseclick highlighting the corresponding person, his friends, etc…

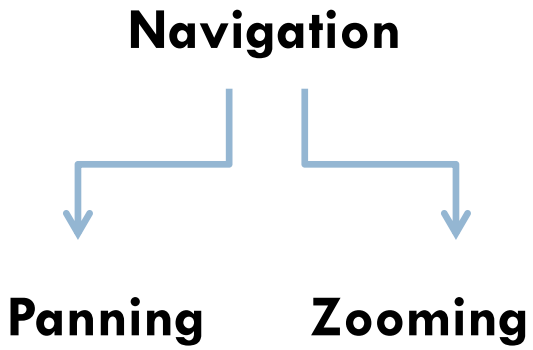


Exploration: Linkage-Views

- Click a node to select any user
- Then tap the spacebar for visualizing all connections between this node and mouse target



Navigation



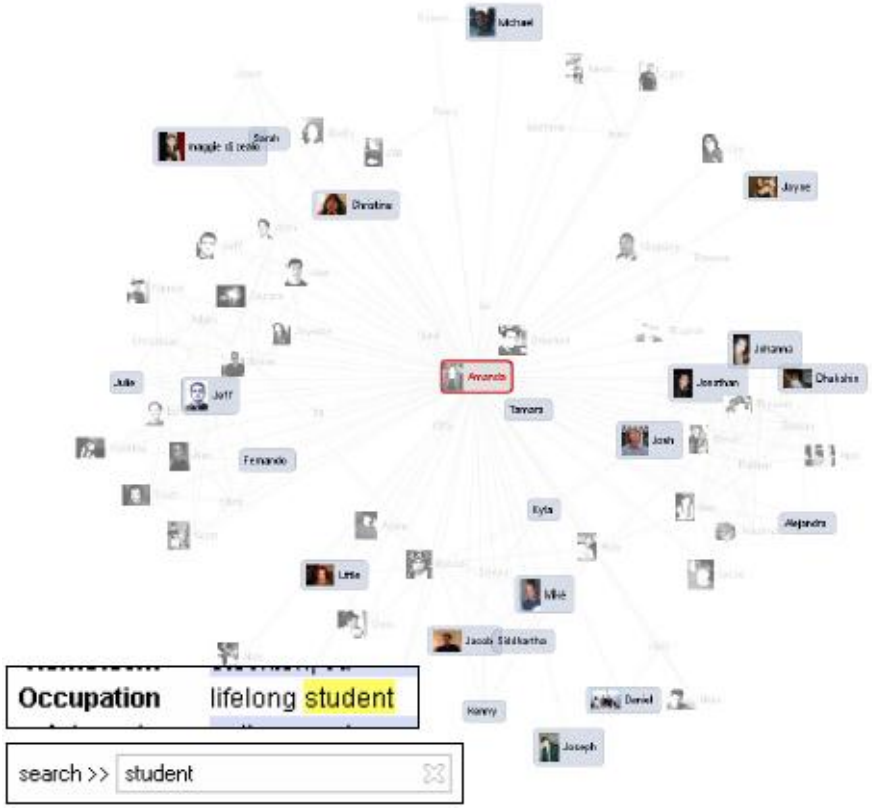
Panning is a GUI function and provides moving the cutting part of a graphic

Panning is performed with left mouse button.

Zooming provides to zoom the graphic.

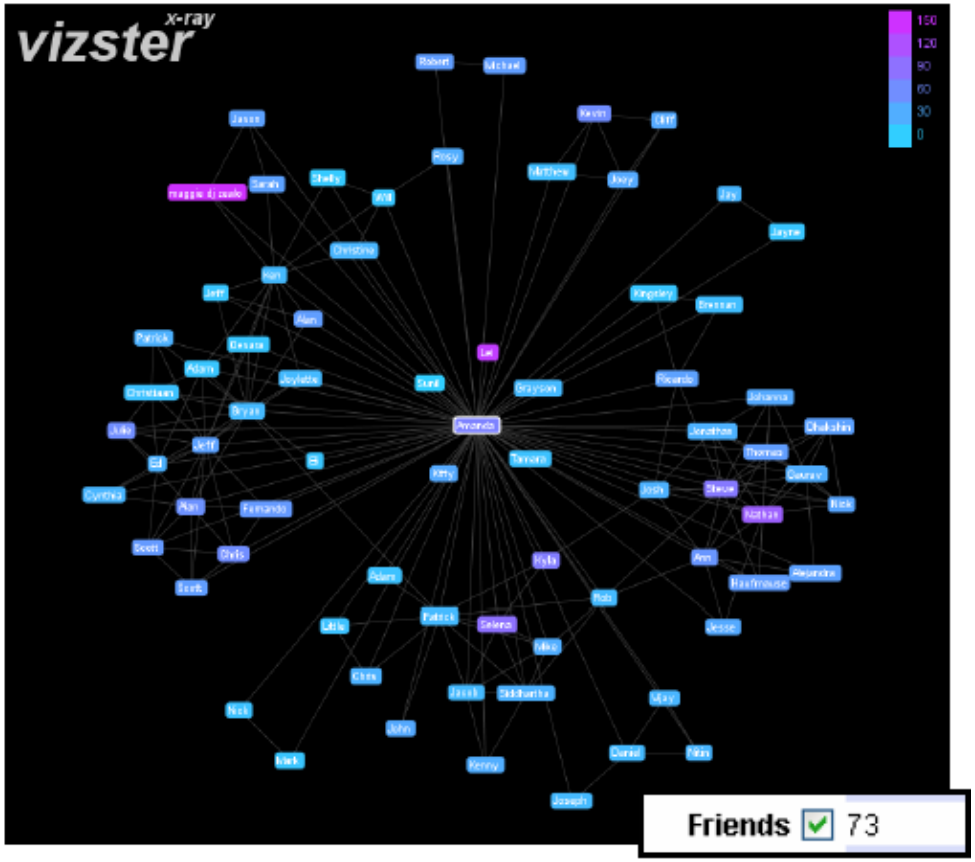
Search - Filtering

- In *Vizster* there is a search box.
- You must only write in the box, what you want to search.



X-Ray Mode : Attribute Visualization

- *Vizster* allows the users to visualize attributes by using X-Ray Mode, such as gender number of friends, *age*, *etc*…



Implementation Details

- Vizster was written in Java using the prefuse Toolkit
- Some extensions were written fordatabase connectivity
- For keyword search Lucene search engine **(http://lucene.apache.org)** was written.
- Network and profile data for visualization were stored in MySQL.
- Source codes for prefuse are in **http://prefuse.sourceforge.net**.

Video Time!!!

- http://www.youtube.com/watch?v=UxsACr2d-iA

2.Paper: Visualizing Social Networks

- The visual images are important for progress in social networks and play key role
- There are two different forms to construct images :
  - Points and lines
  - Matrices

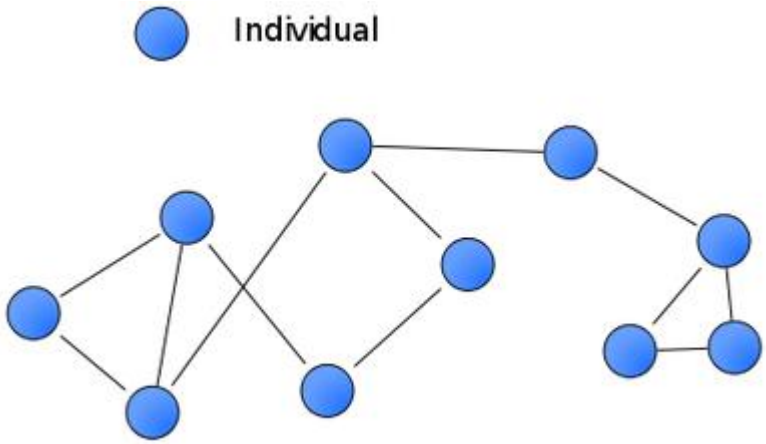
Points and lines, Matrices

- Points represent social actors
- Lines represent the connections among the actors
- Matrices display the rows and columns and these represent social actors and numbers in the cell
- These cells display social connections

Jacob Levy Moreno

- Jacob Levy Moreno was a psychatrist and psychosociologist and the founder of Psychodrama
- He was recognized as a social scientist.
- Developer of Sociogramms

Sociogramm



- In short, sociogramm is a graphic represrentation of social links

History of Visualization Images

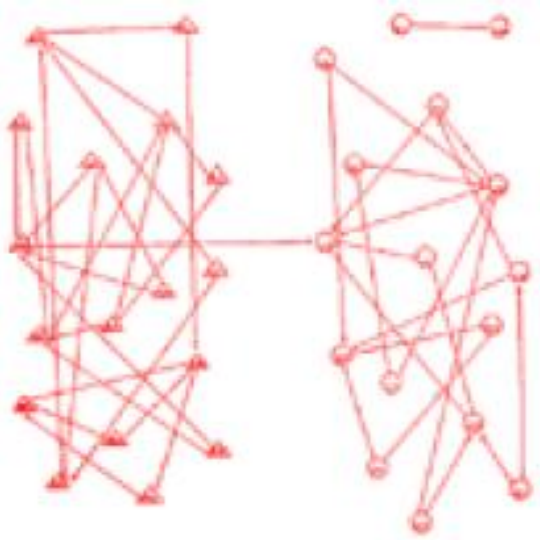
- 1930… graphic images were produced by hand
- 1950… investigators began to turn to use of standard computational procedures for producing images
- 1970… investigator began to produce computer drawn images.
- 1980… presence of PC‘s encouraged the investigators to develop images that could be display on monitors and in colors.
- 1990… presence of Web Browsers provide of new possibilities for graphic display.

Hand Drawn Images in Social Network Analysis

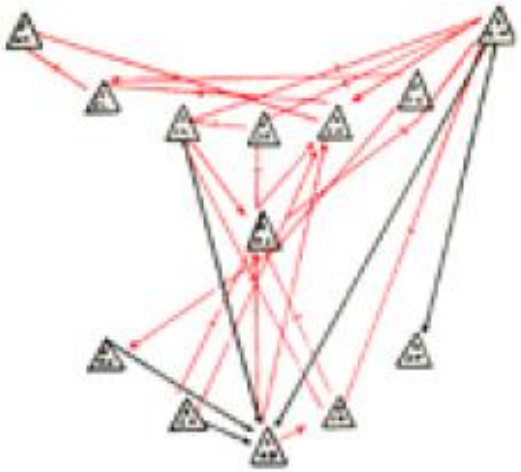
- Network images have been used to represent *social groups* and *social positions*.

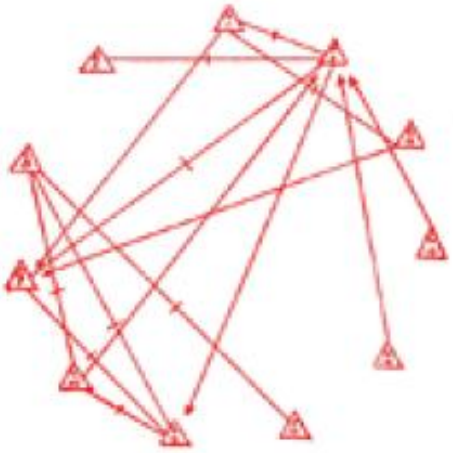
- Graph consists of set of points along with a set of lines connecting pairs of points
- Is drawn by Jacob L. Moreno
- His goal is to reveal structural information about social linkage patterns
- Is an undirected graph

- Is a directed graph
- Directed relation linking two actors



- The different shapes and placement of points show the segregation for choosing by gender.
- Boys are shown as triangles and girls

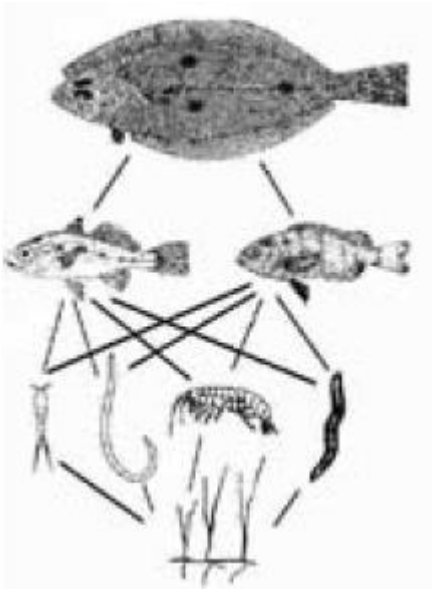




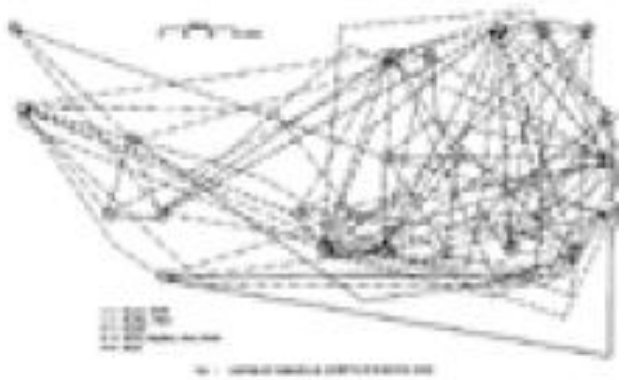
- This graph shows positive and negative choices in thirteen members of a football team
- The red lines depict positive choices.
- The black lines depict negative choices

Moreno‘s Followers and their ideas

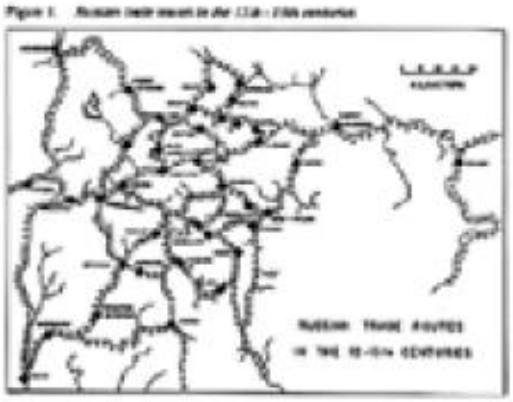
- Other investigators follow Moreno‘s idea



who eats whom graph



Visiting patterns among households

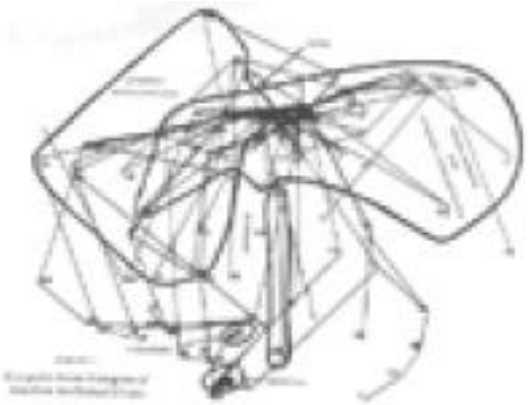


A Map of Russian River Trade Routes

Computer Generated Point and Line Images

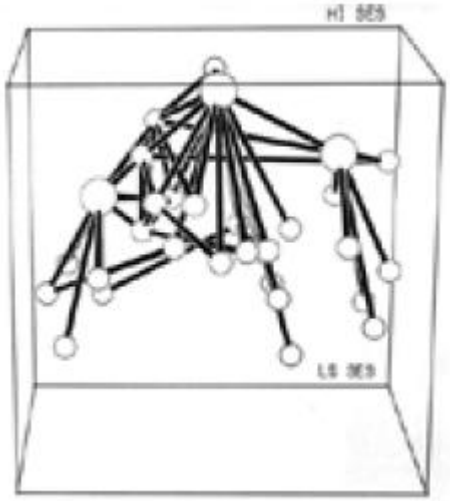
- SOCK
  - was developed by Alba,Gutmann and Kadushin
  - Is a software for drawing line and point graphics automatically

Example: Image of Contacts among Intellectual Elits

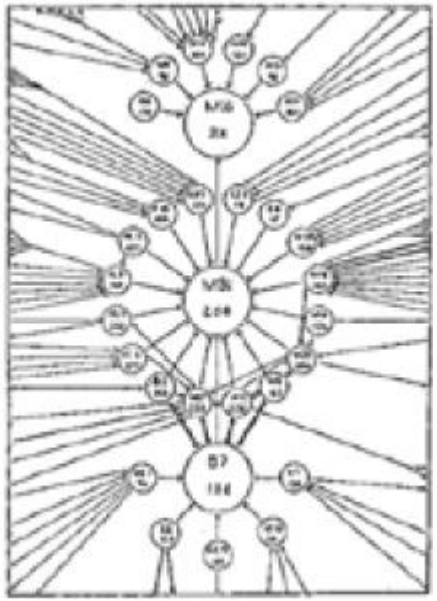


ORTEP

- was designed to produce images of molecules and to the production of network images.

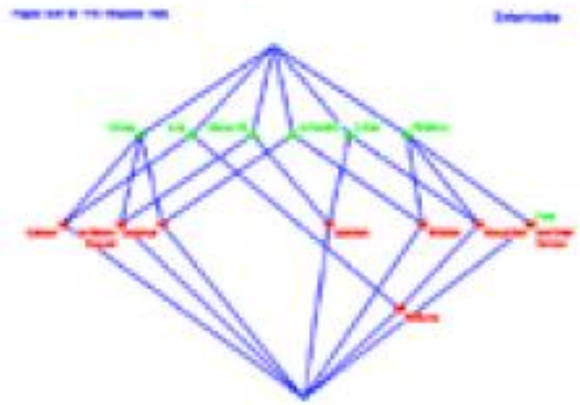


ORTEP Rendition of data for the right graph



Screen Oriented Point and Line Images

- **GLAD**
  - is designed to organize network data into Galois lattice
  - Galois lattice displays an order structure



is a Galois lattice arrangement of graph on right

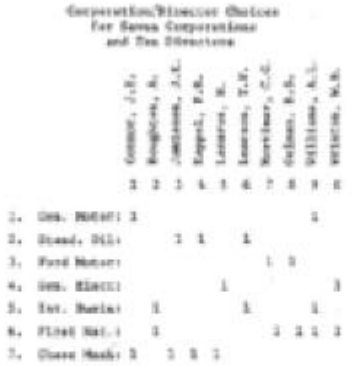


Figure 17. Links between Corporations and Corporate Directors.

Moviemol:

- uses animation to display dynamic process.
- Programm Environment: Under Dos, not on Windows
- is designed for chemistry.
- Therefore it is difficult to use for social network analysis

Krackplot:

- Program Environment: in DOS on a PC.
- produces screen images
- Various algorithms were included to locate points
- Various devices for moving and editing points and changing their shaes and colors.

Pajek

- has several algorithms to locate and move points and change labels, shapes and colors in either 2D or 3D.

NetVis

- is a general graph drawing program
- runs only on a Silicon Graphics workstation.
- can locate points in 2D.
- Users can modify locations is able to vary in their sizes, shapes and colors.

Multinet

- can locate the points using correspondece analysis
- produces 2D or 3D images
- Permits users to rotate the images and to color points.

Social Network Images in Web Browser

- Spring Embedder
  - Developed by Michael Chan, University of Illinois
  - To analysis and display of social network

Fragen ???