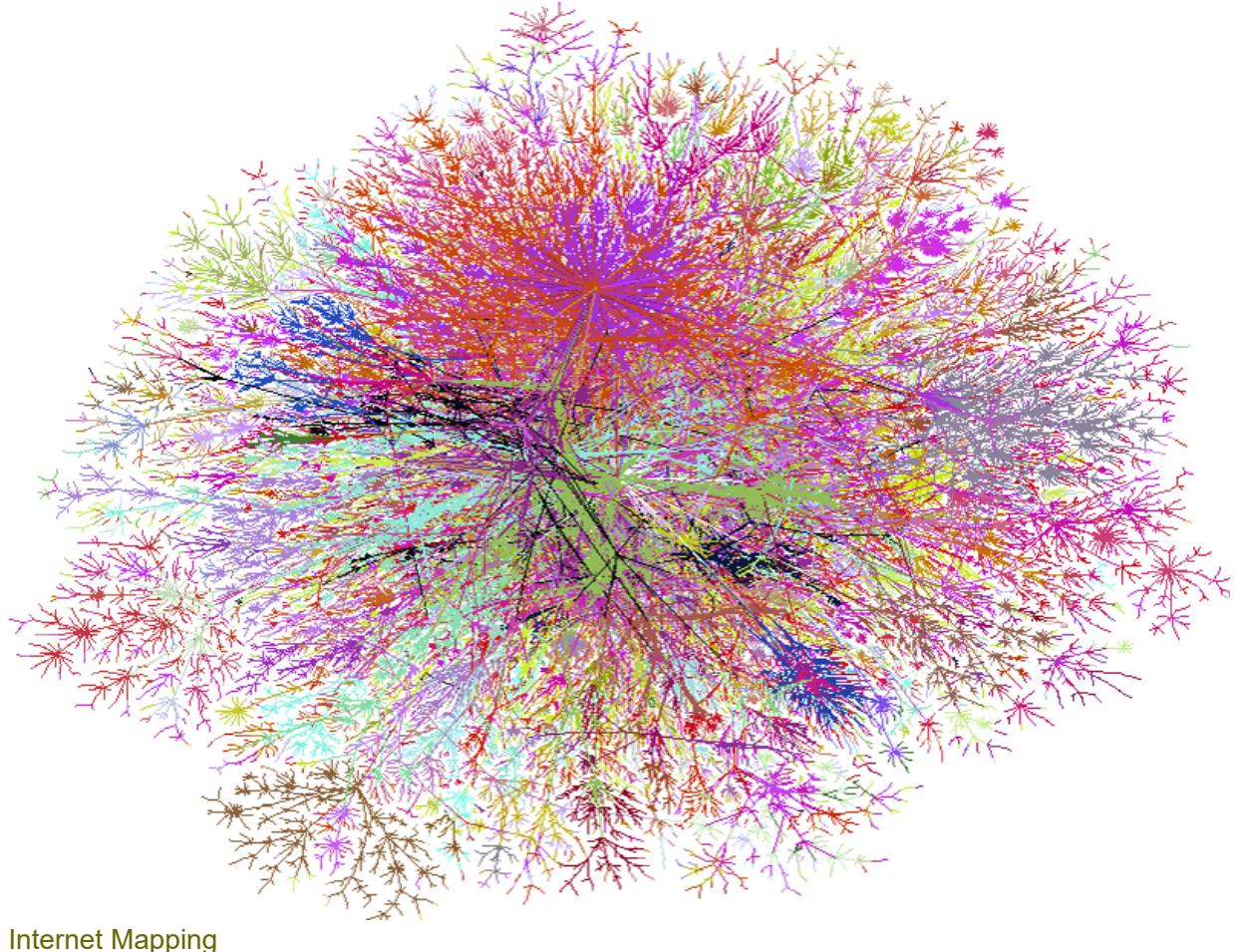


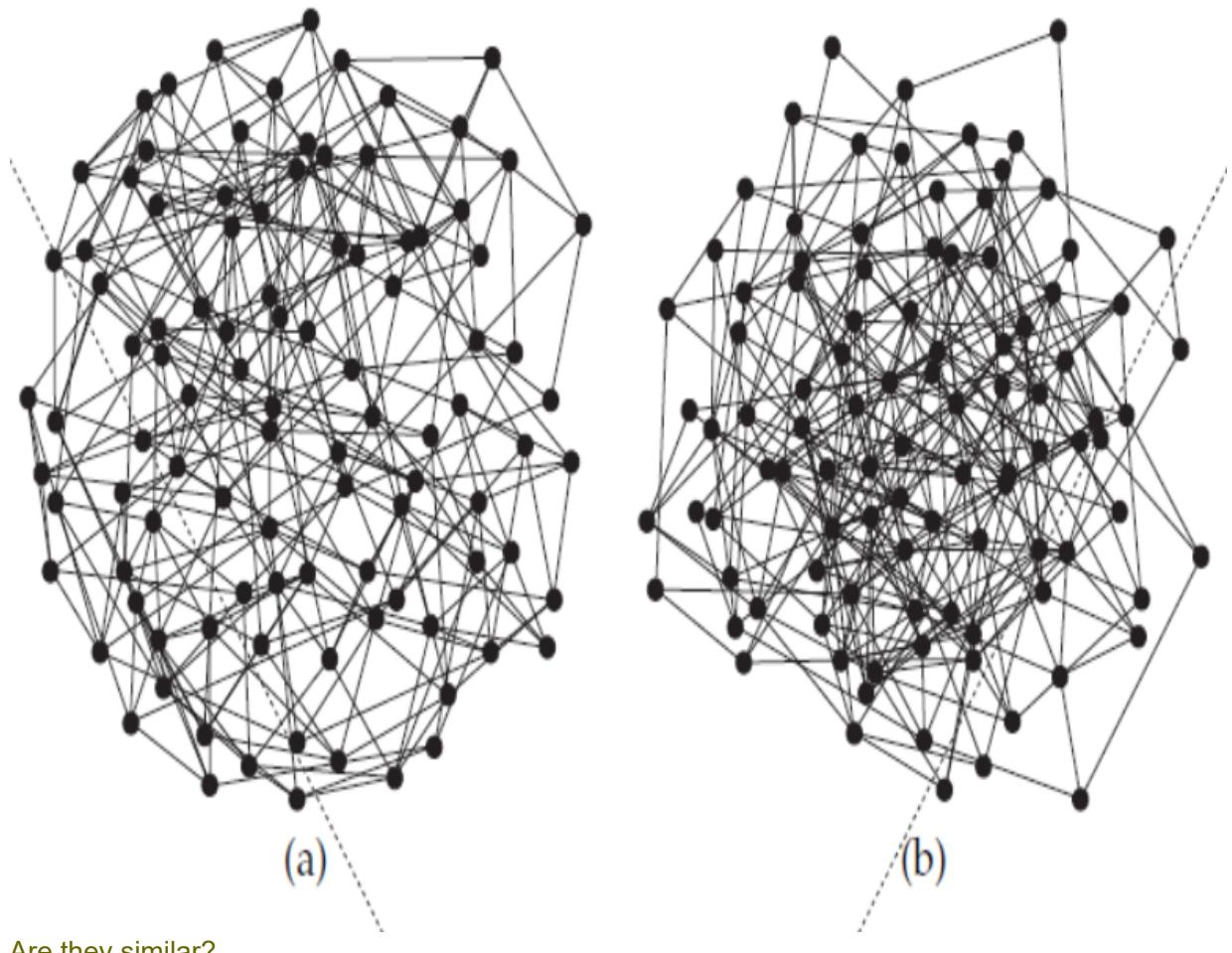
# 10. Network Analysis

## Internet Mapping

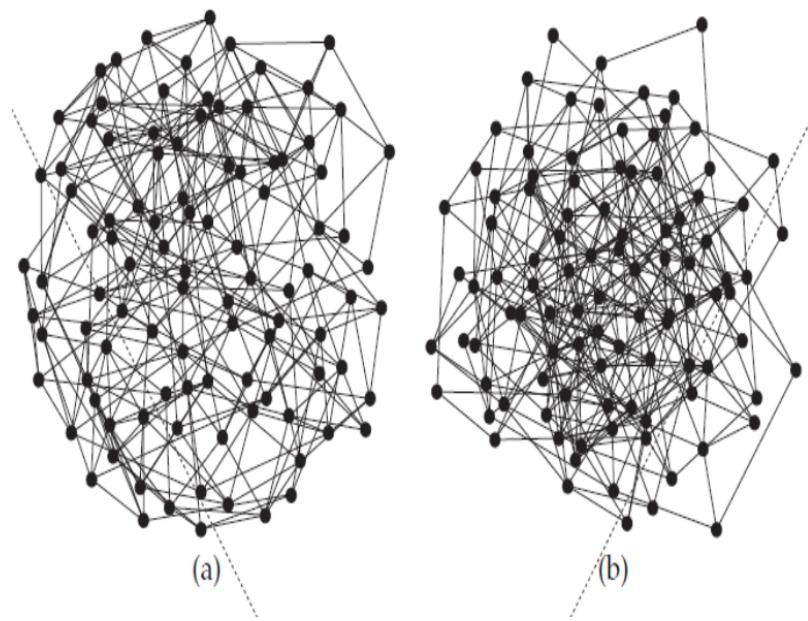


**Two complex networks**

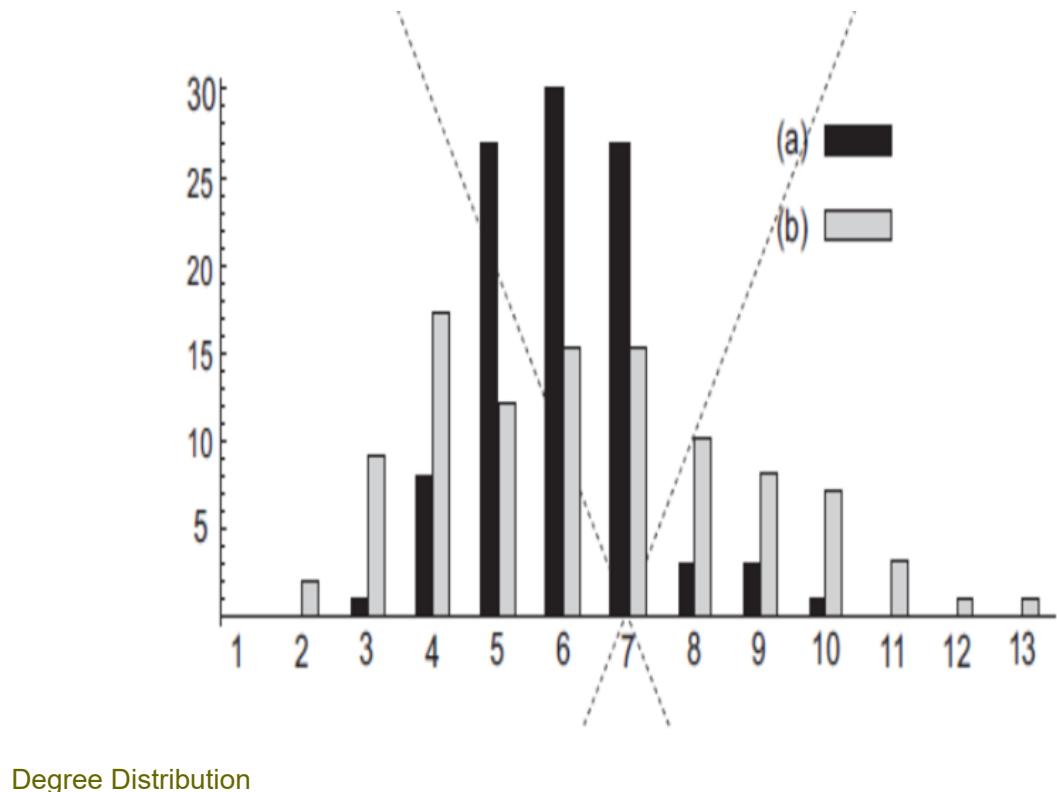
**Are they similar or not?**



Are they similar?

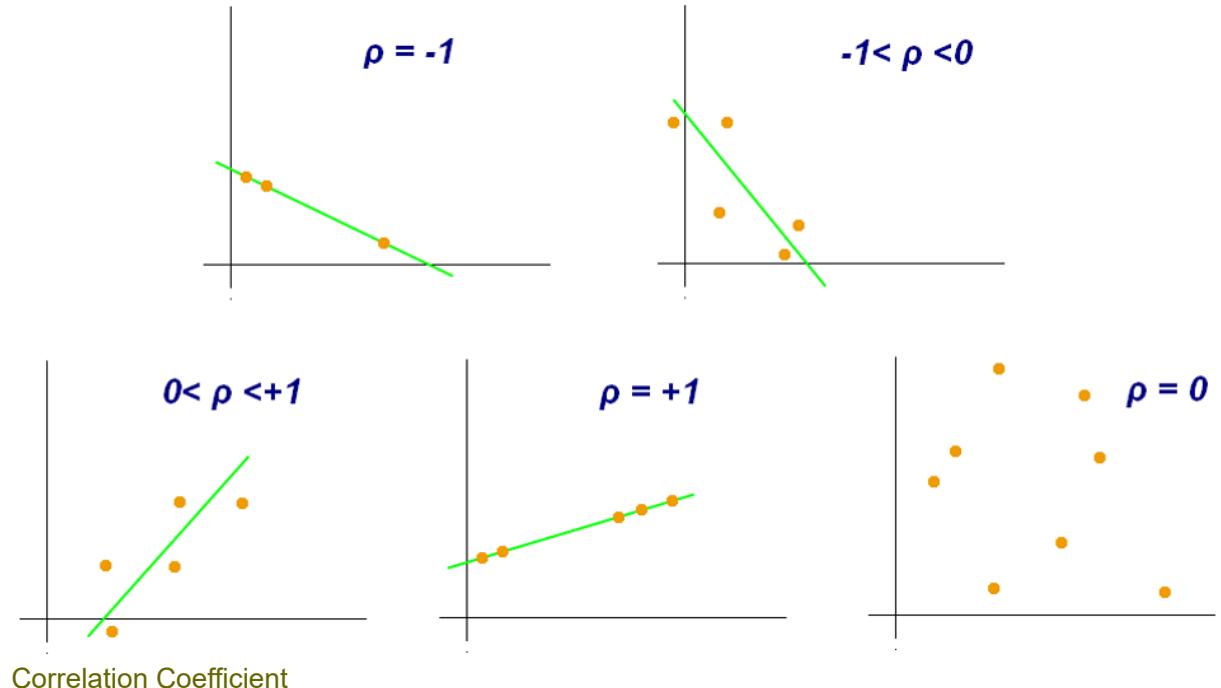


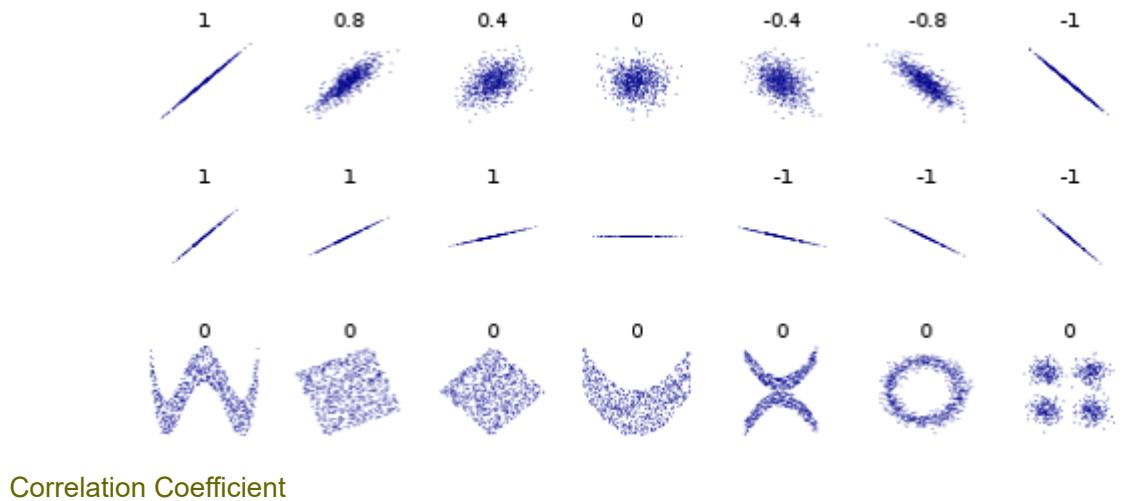
Two complex networks



Degree Distribution

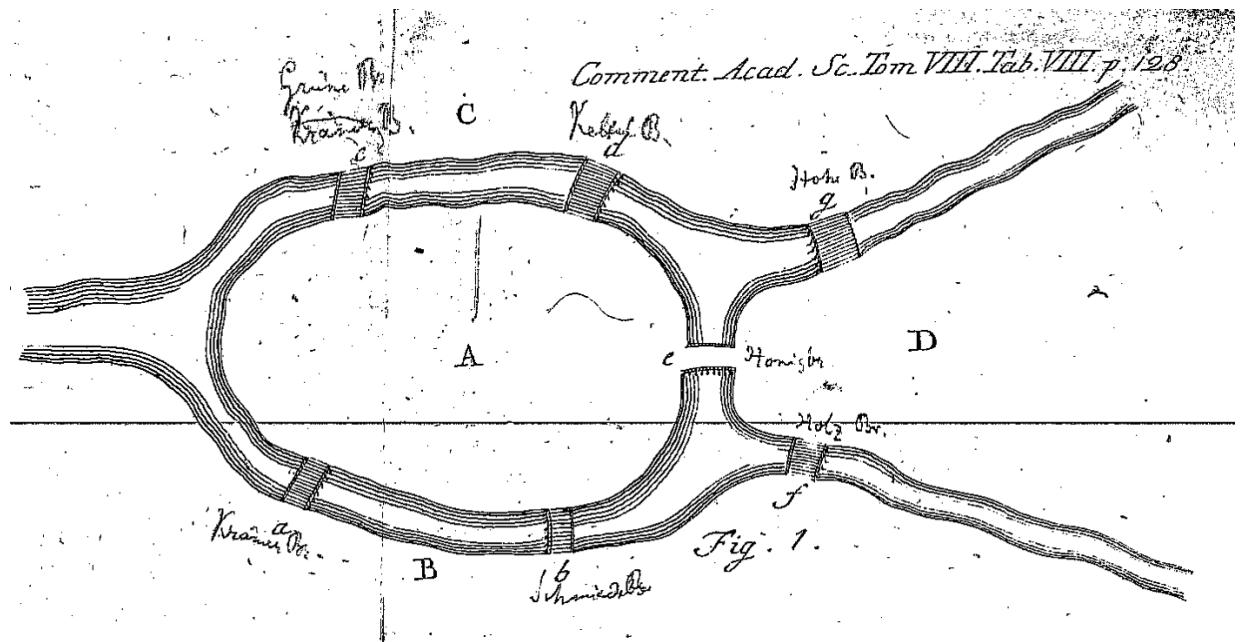
## Correlation Coefficient





Correlation Coefficient

## Seven Bridges of Königsberg



Seven Bridges of Königsberg, 1735

## First Sociogram

# EMOTIONS MAPPED BY NEW GEOGRAPHY

Charts Seek to Portray the Psychological Currents of Human Relationships.

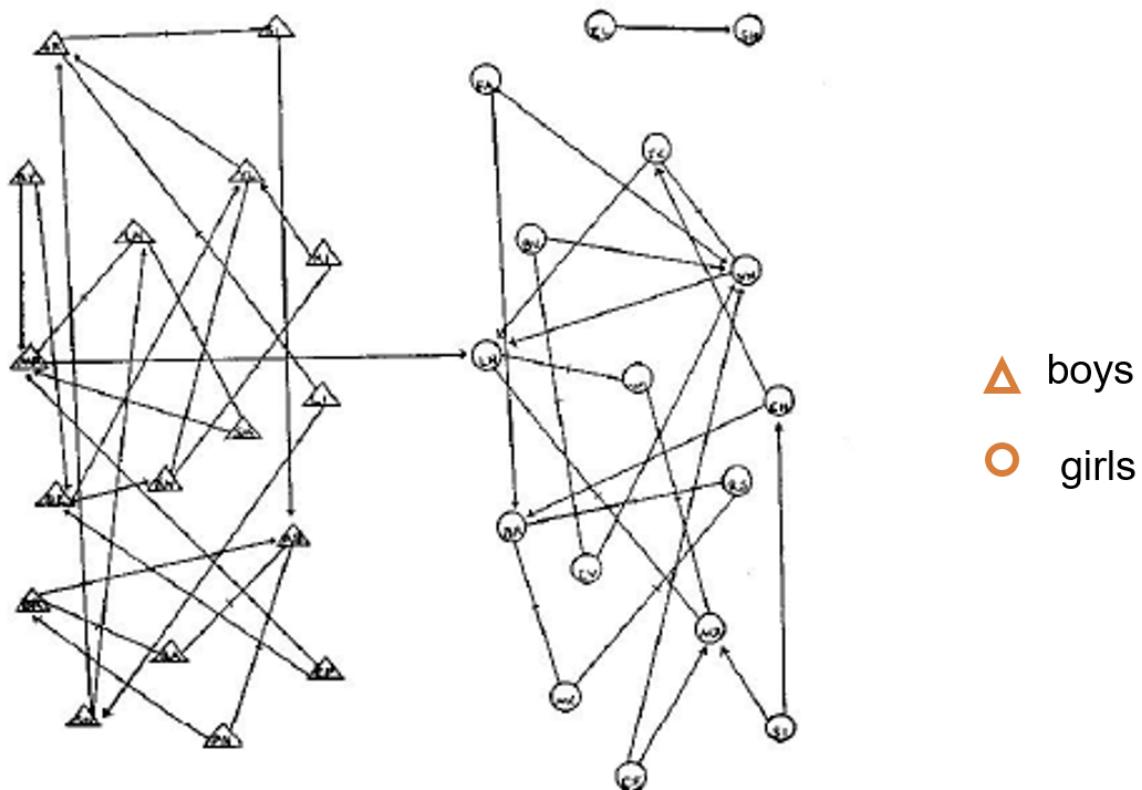
## MANY MISFITS REVEALED

Dr. J. L. Moreno Calculates There Are 10 to 15 Million Isolated Individuals In Nation.

A new science, named psychological geography, which aims to chart the emotional currents, cross-currents and under-currents of human relationships in a community, was introduced here yesterday at the

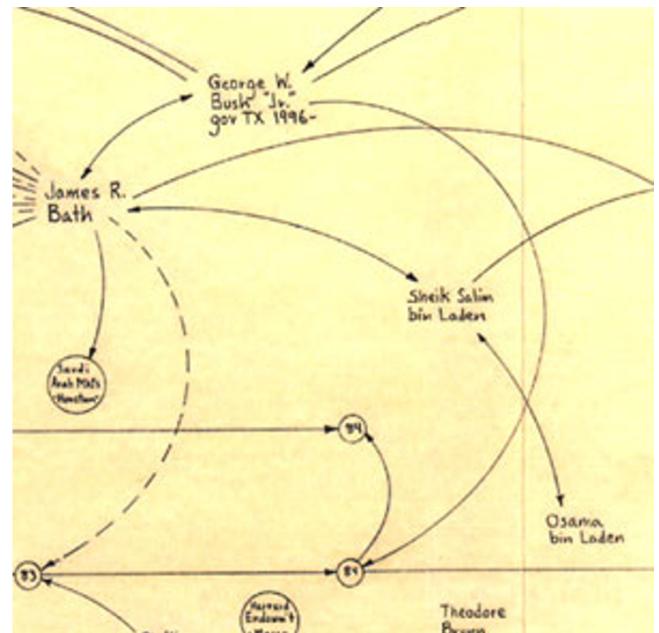
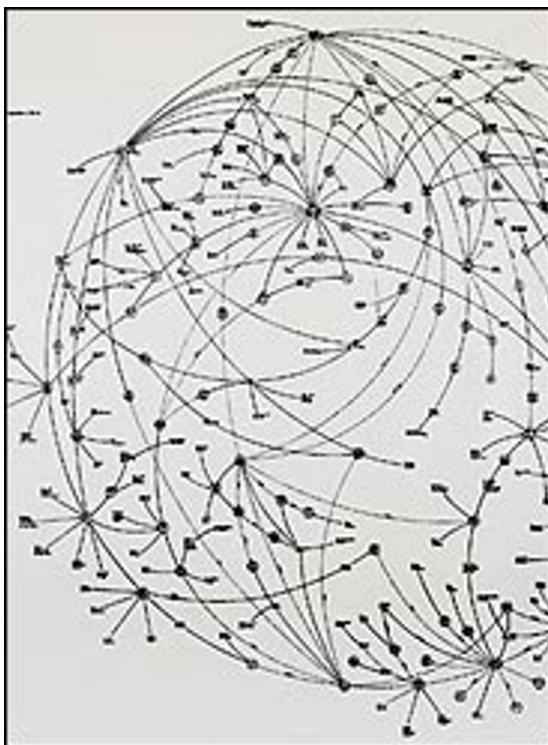
The First Sociogram at meeting of the Medical Society of New York State, 1933

## Attraction Network



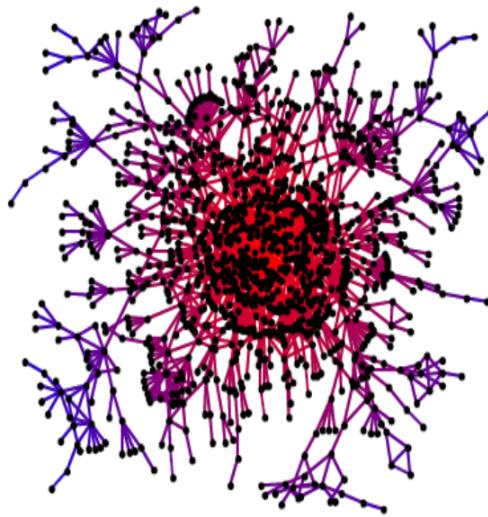
An Attraction Network in a Fourth Grade Class (Moreno, 'Who shall survive?', 1934).

## Financial fiascos

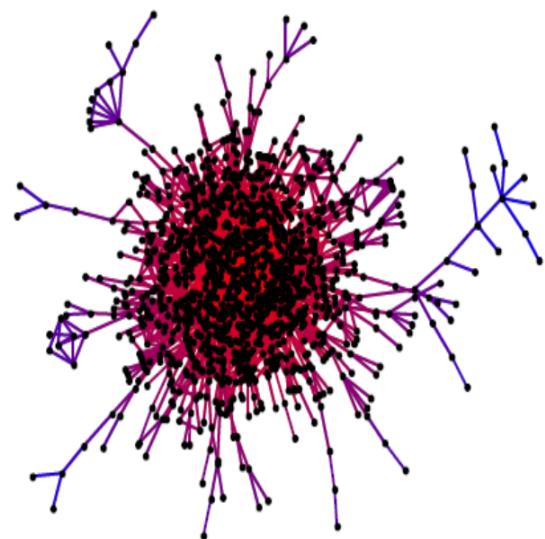


Mark Lombardi: tracked and mapped global financial fiascos in the 1980s

## Networks of Personal Homepages



Stanford

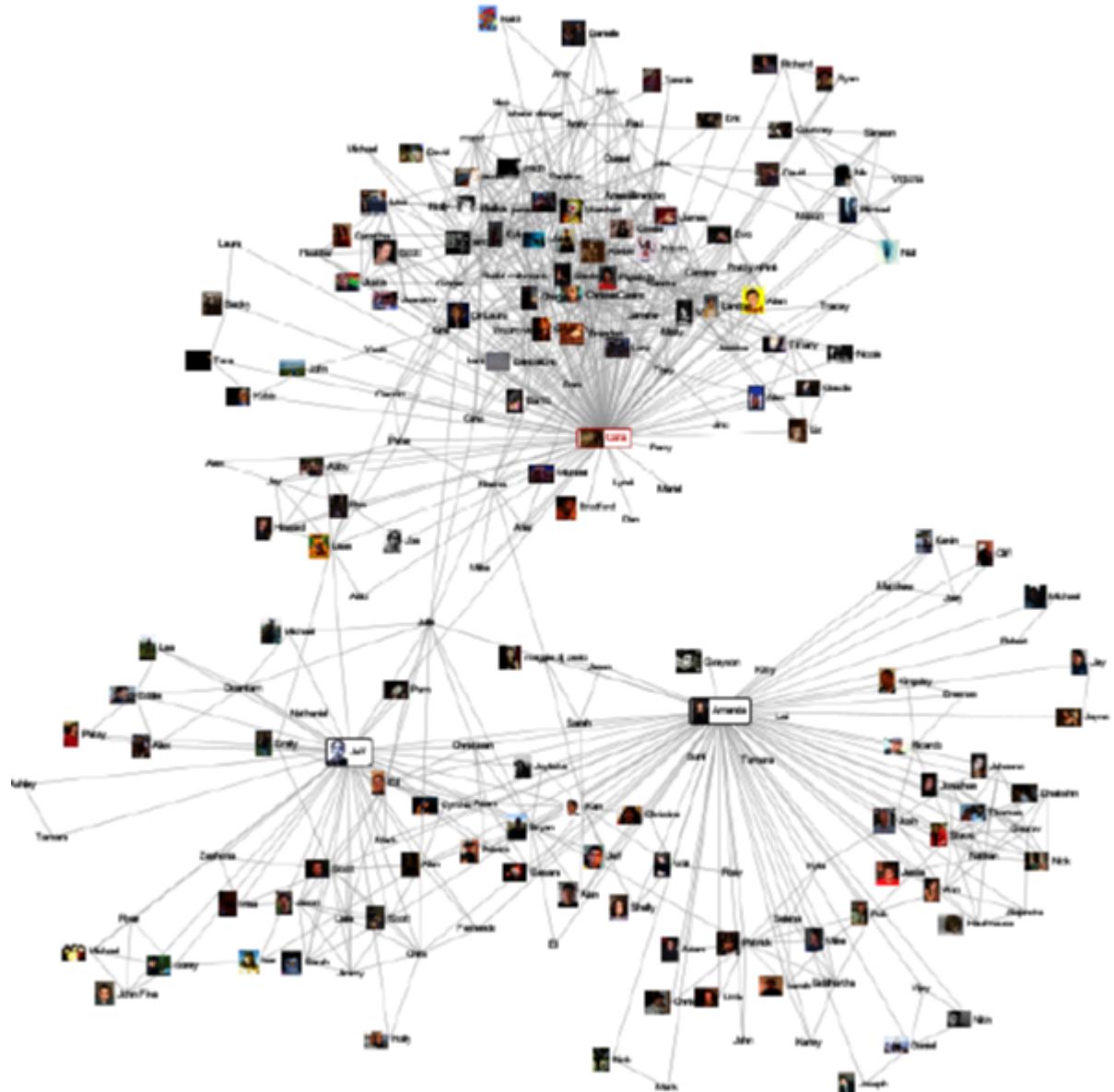


MIT

Graph layouts of social webs, with points representing homepages, and lines representing the links between them.

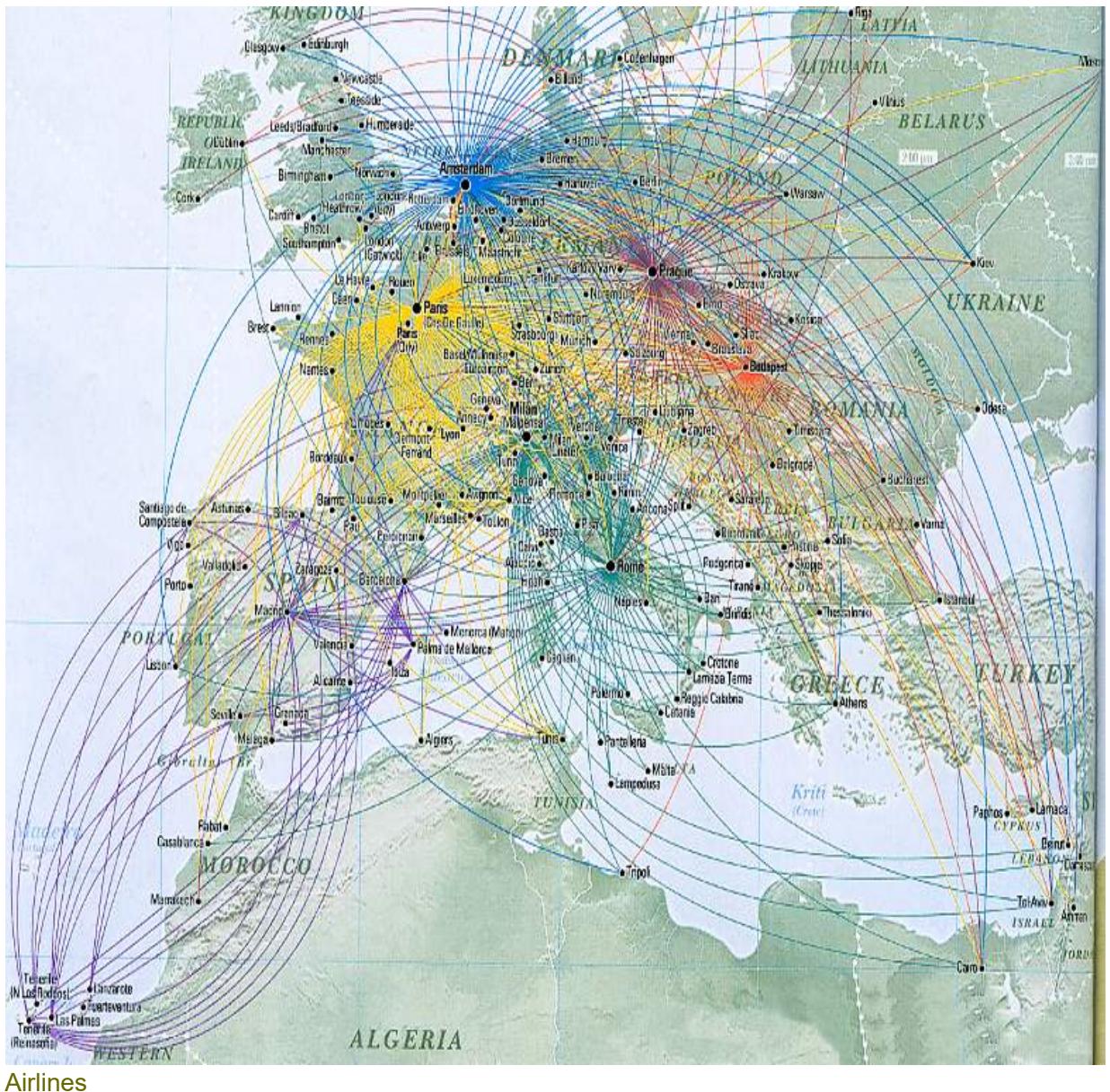
Graph layouts of social webs, with points representing homepages, and lines representing the links between them.

## Online Social Networks, Friendster



Online Social Networks, Friendster

## Airlines



## Airlines

# Highway



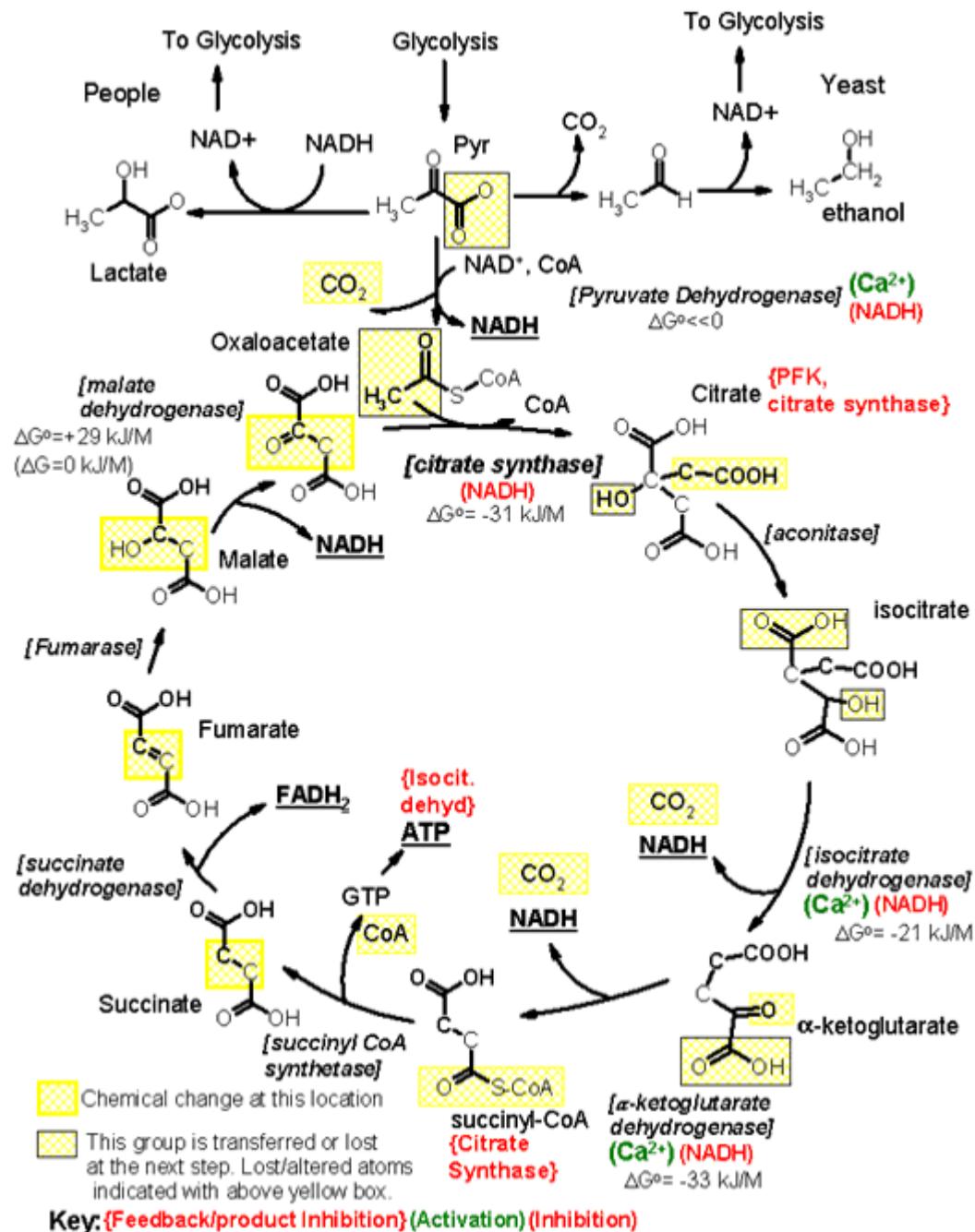
## Highway

# Subway Seoul



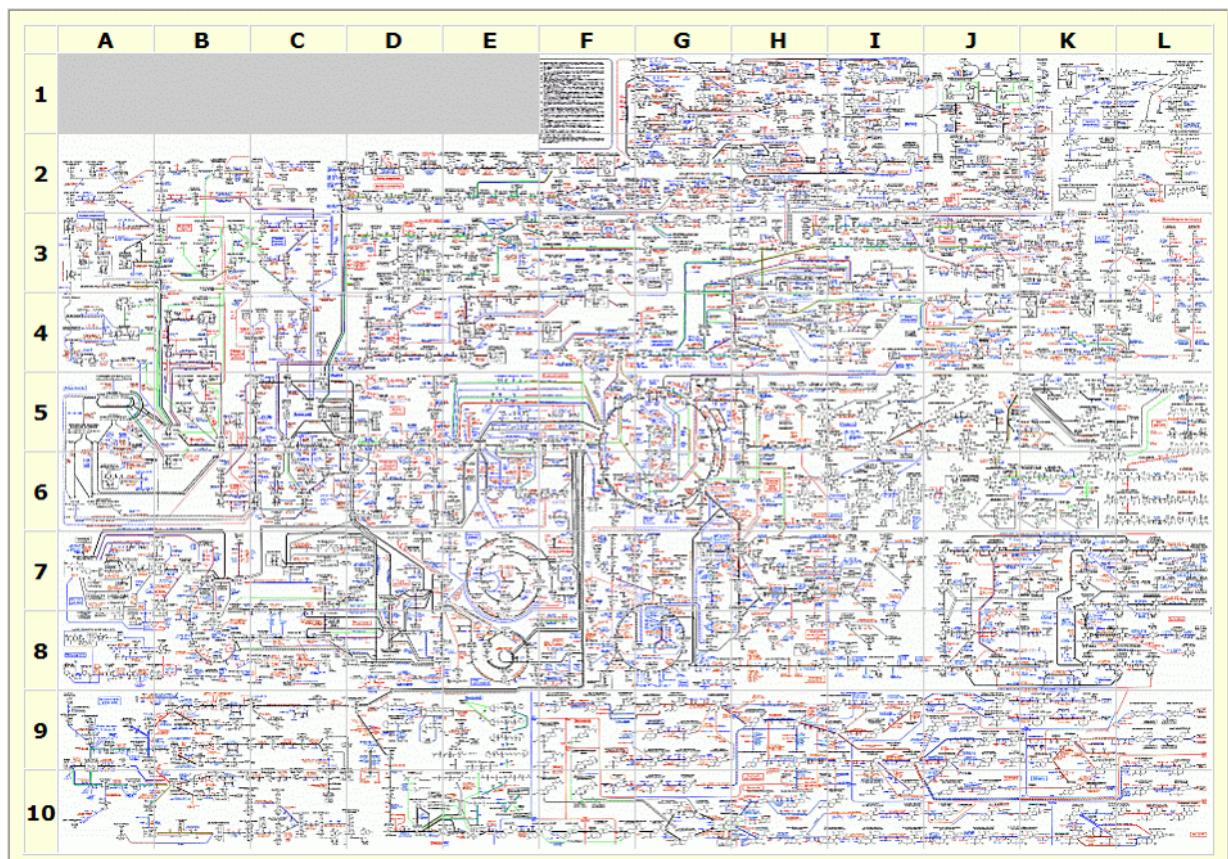
Subway Seoul

## Other biological networks



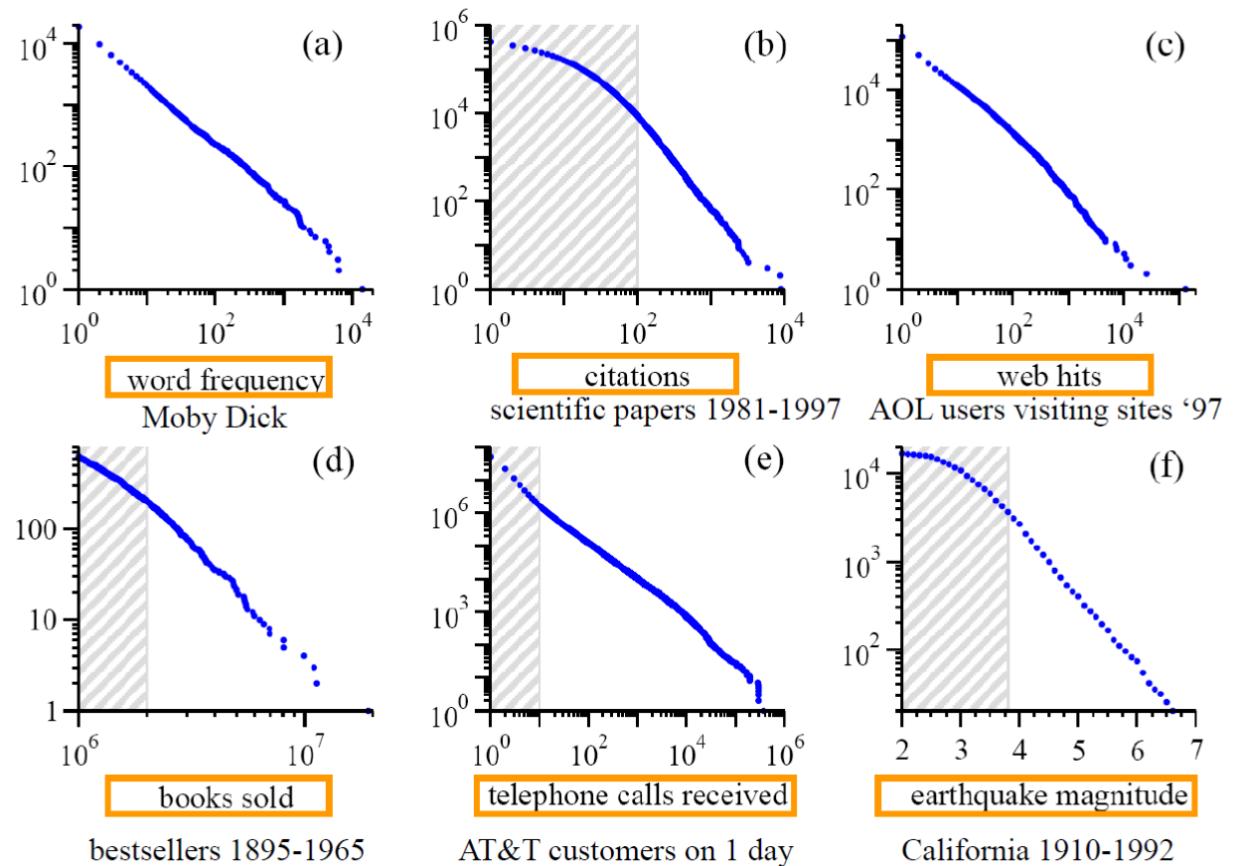
Other biological networks

## Biochemical pathways



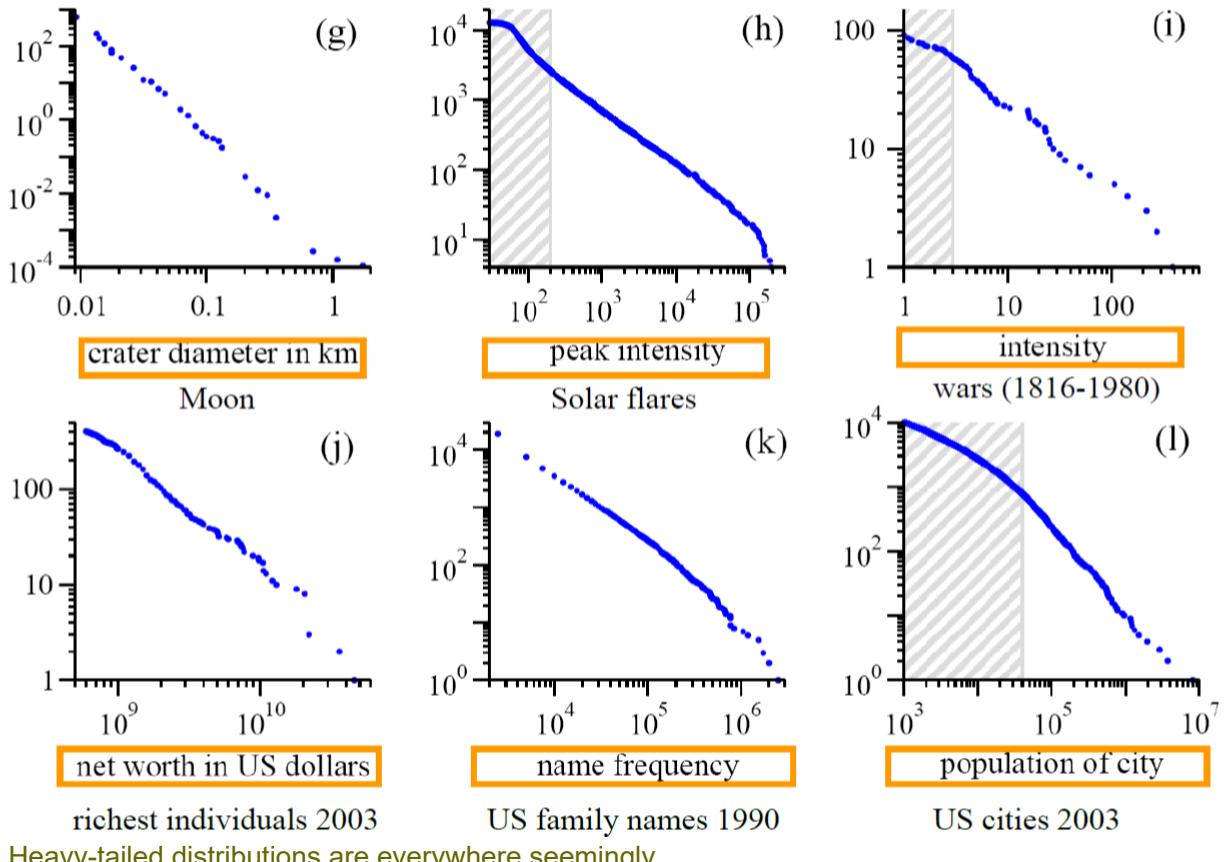
Biochemical pathways (Roche)

## Heavy-tailed distributions are everywhere seemingly



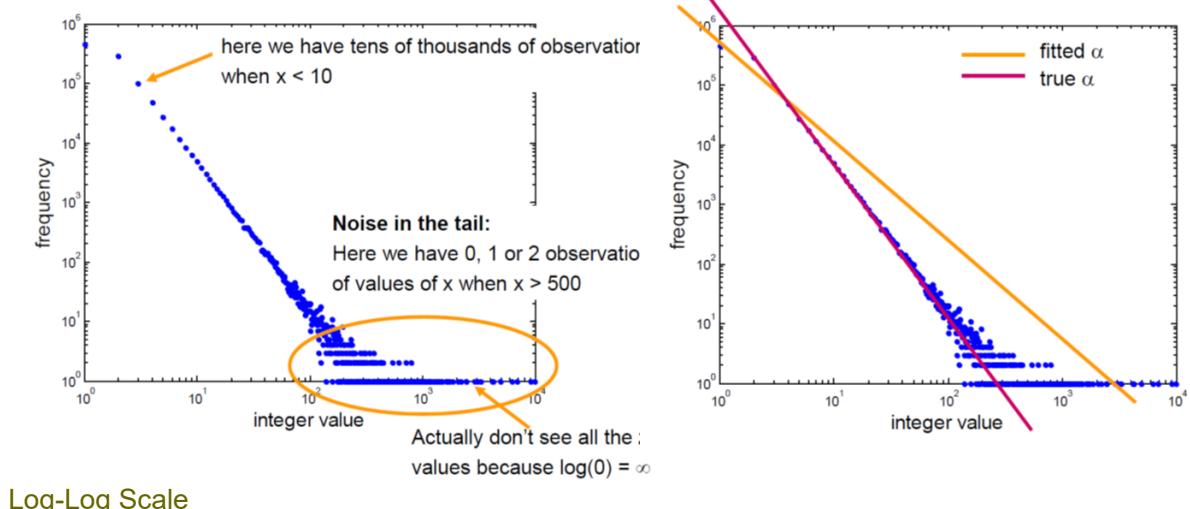
Heavy-tailed distributions are everywhere seemingly

## Heavy-tailed distributions are everywhere seemingly



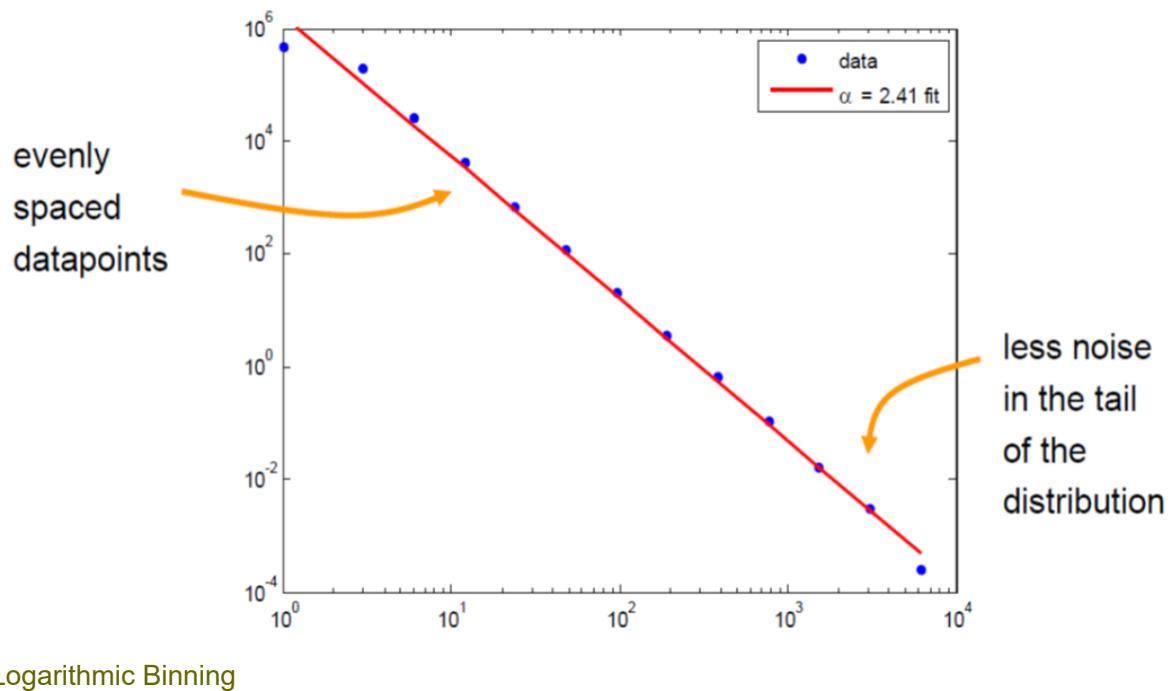
Heavy-tailed distributions are everywhere seemingly

## Log-Log Scale

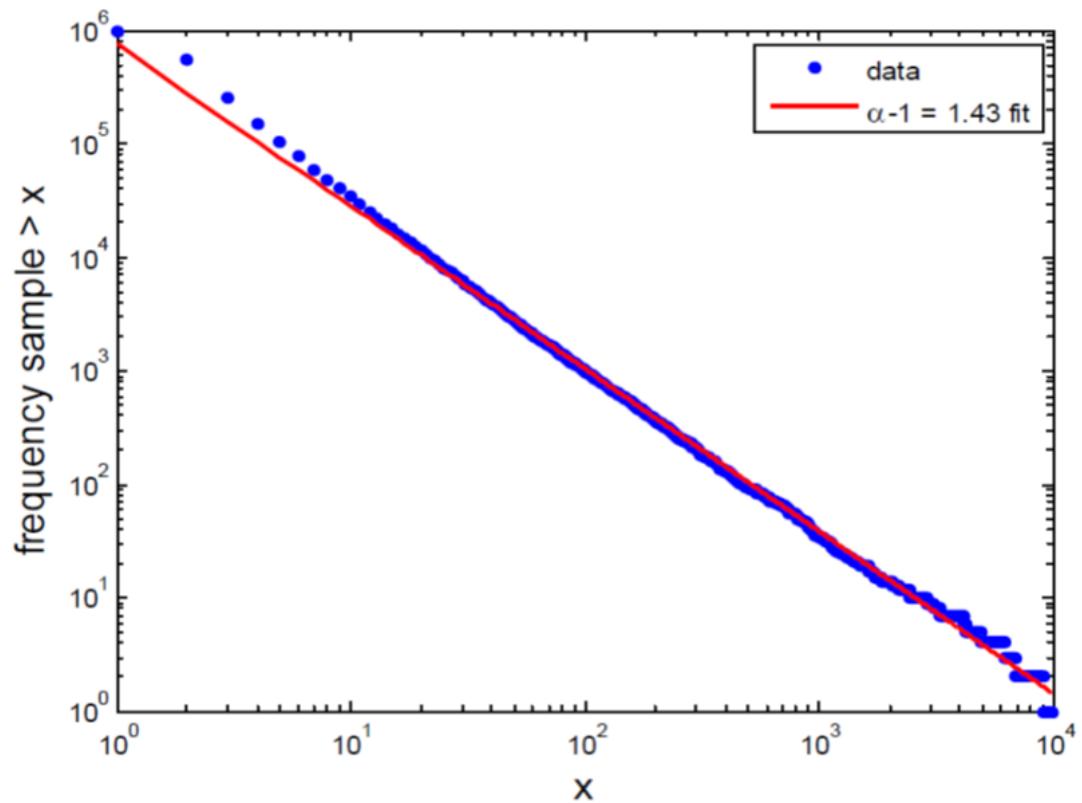


Log-Log Scale

## Logarithmic Binning

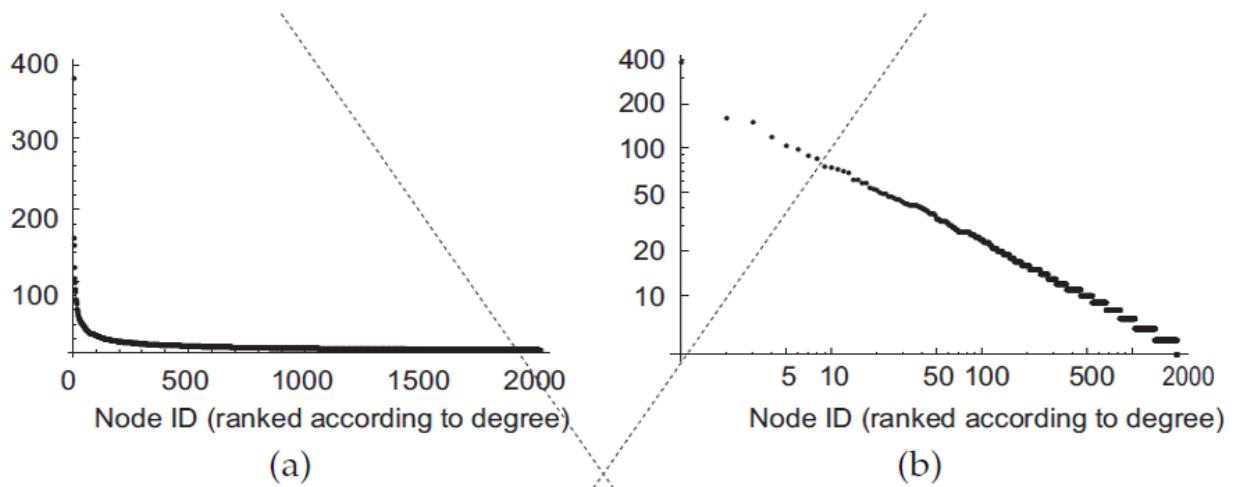


## Cumulative Binning



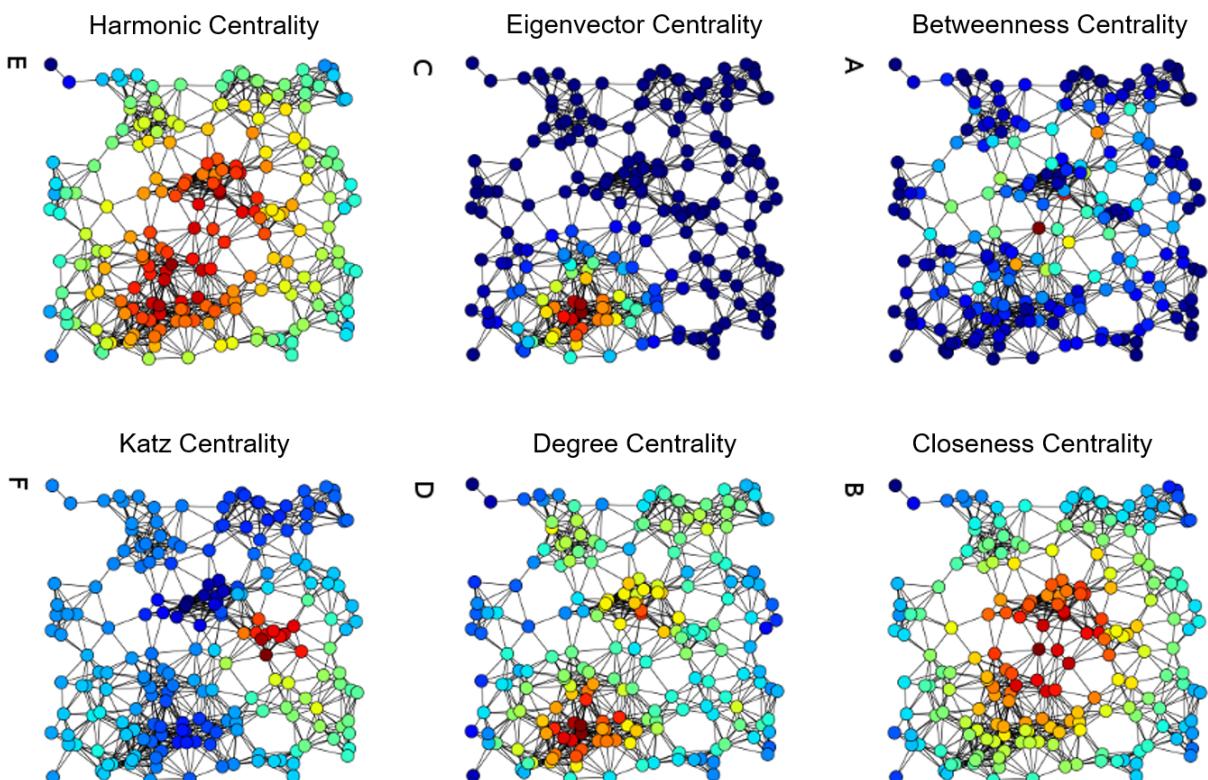
Cumulative Binning

## Free Scale Networks



Free Scale Networks

## Centralities



A) Betweenness Centrality B) Closeness Centrality C) Eigenvector Centrality D) Degree Centrality E) Harmonic Centrality F) Katz Centrality

In [ ]: