SOCIOLOGICAL THEORY

Michaelmas 2024

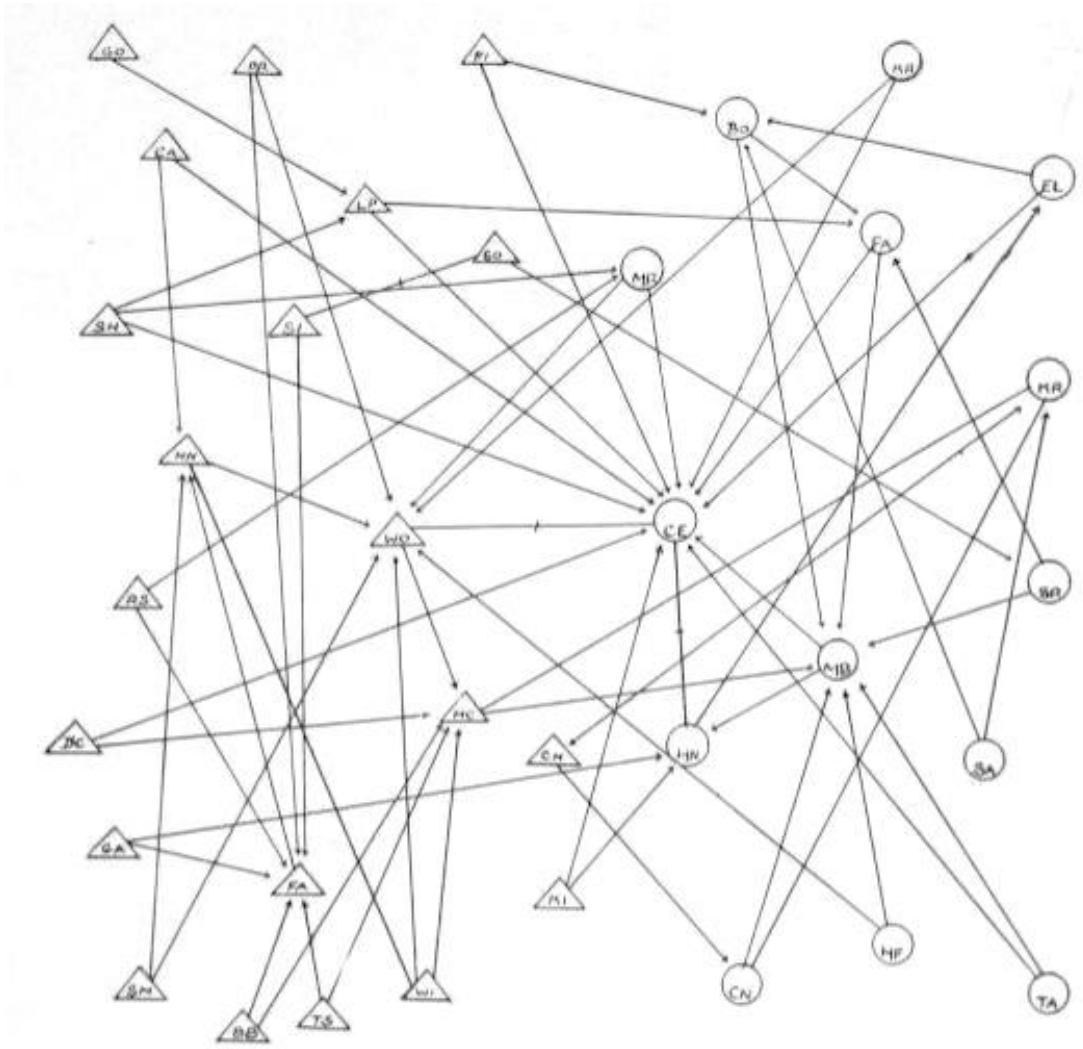
Dr Michael Biggs

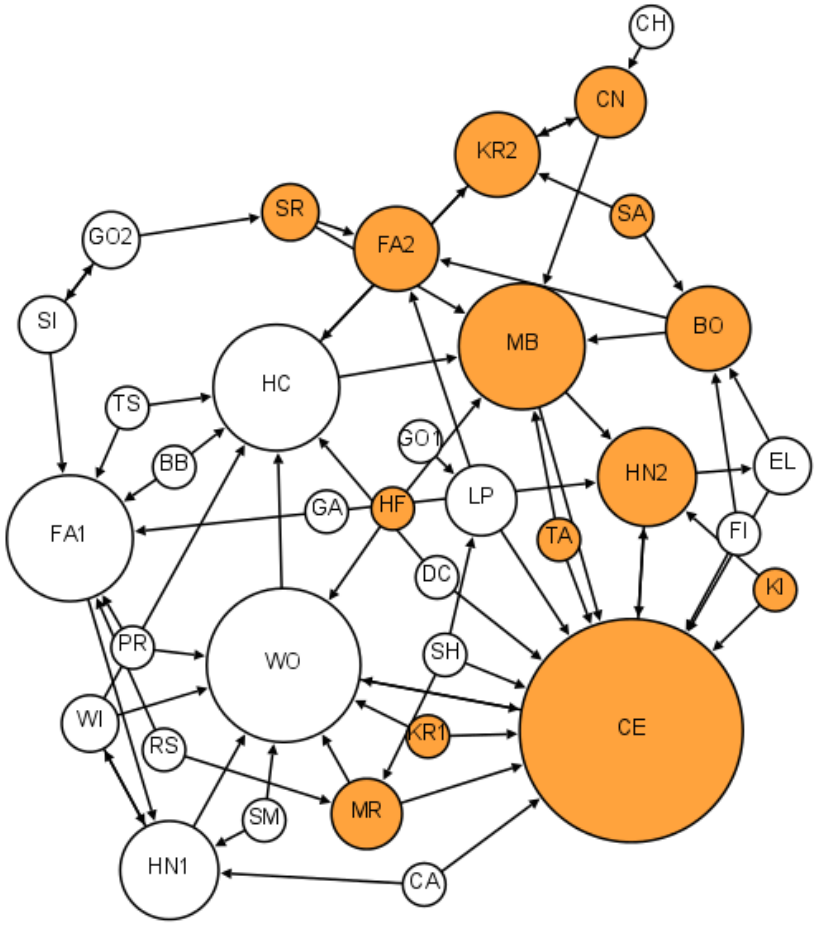
Theoretical Perspectives

6. Social networks

http://users.ox.ac.uk/~sfos0060/SociologicalTheory.shtml

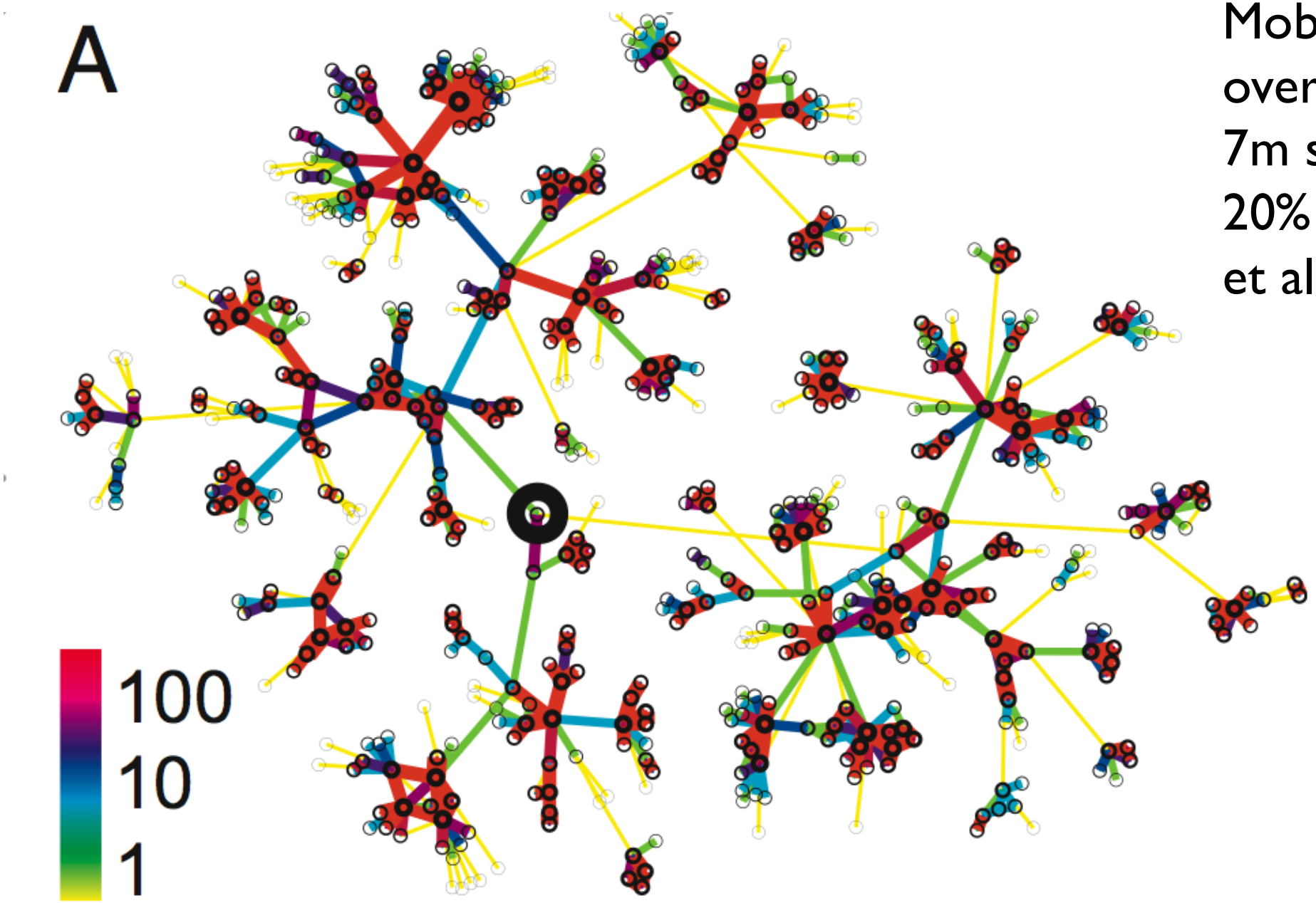
(i) relationships among individuals: friendship, contact





Sociogram of 6-year-old pupils: two choices of studying/sitting. Jacob L. Moreno, *Who Shall Survive? A New Approach to the Problem of Human Interrelations* (1934)

Redrawn by Martin Grandjean: girls in white, boys in orange



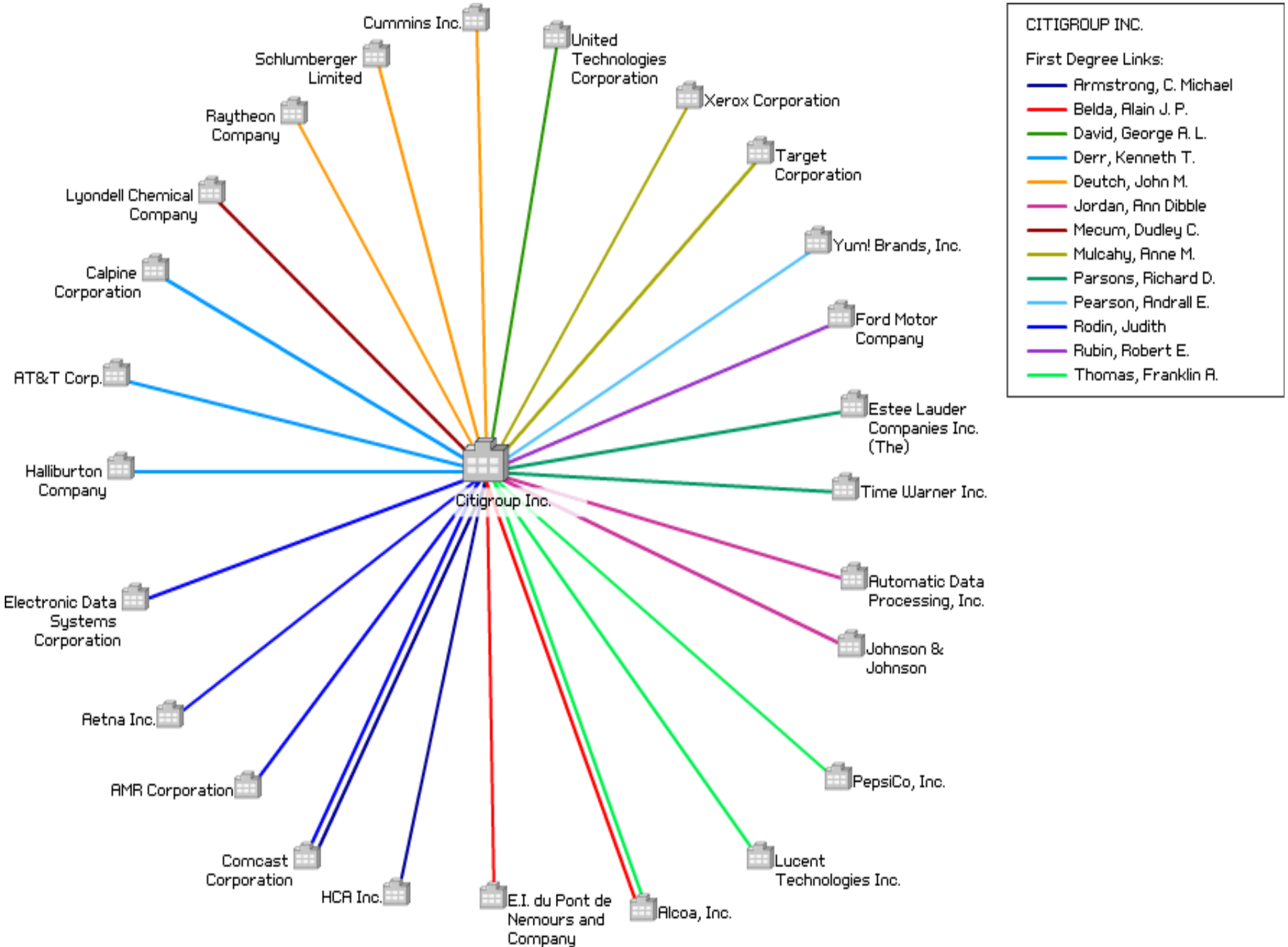
Mobile phone calls:
over 18 weeks
7m subscribers
20% of country (Onnela et al. 2007)

aggregate call duration in minutes

(ii) individual affiliation with other entities

(Breiger 1974)

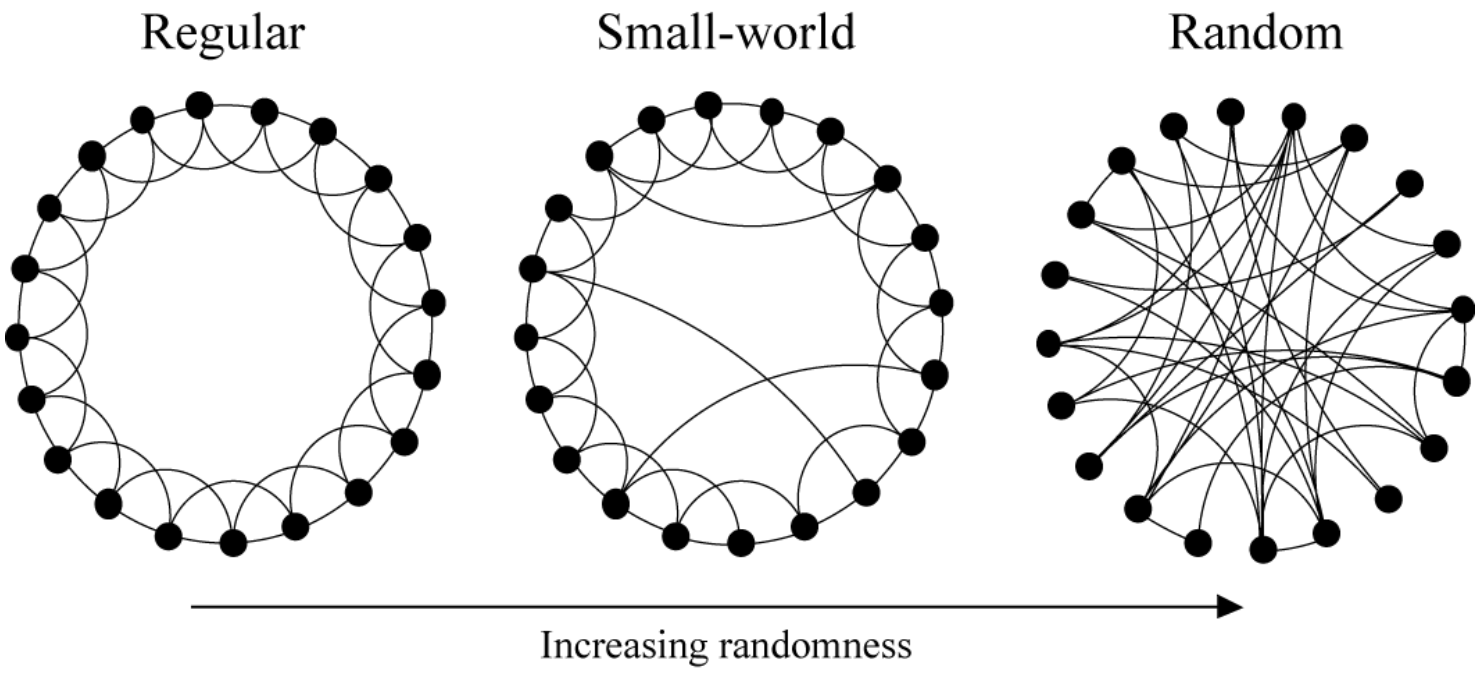
- relationships among *individuals* affiliated with the same entity—e.g. coauthors of a scientific article; directors on the board of a company)
- relationships among *entities* sharing the same individual—e.g. articles by the same author; companies sharing the same director …


Cummins Inc.
United Technologies Corporation
Schlumberger Limited
Xerox Corporation
Raytheon Company
Target Corporation
Lyondell Chemical Company
Yum! Brands, Inc.
Calpine Corporation
Ford Motor Company
AT&T Corp.
Estee Lauder Companies Inc. (The)
Halliburton Company
Time Warner Inc.
Citigroup Inc.
Automatic Data Processing, Inc.
Johnson & Johnson
Electronic Data Systems Corporation
Aetna Inc.
PepsiCo, Inc.
AMR Corporation
Lucent Technologies Inc.
Comcast Corporation
HCA Inc.
E.I. du Pont de Nemours and Company
Alcoa, Inc.
CITIGROUP INC.
First Degree Links:
Armstrong, C. Michael
Belda, Alain J. P.
David, George A. L.
Derr, Kenneth T.
Deutch, John M.
Jordan, Ann Dibble
Mecum, Dudley C.
Mulcahy, Anne M.
Parsons, Richard D.
Pearson, Andrall E.
Rodin, Judith
Rubin, Robert E.
Thomas, Franklin A.

Characteristics of networks

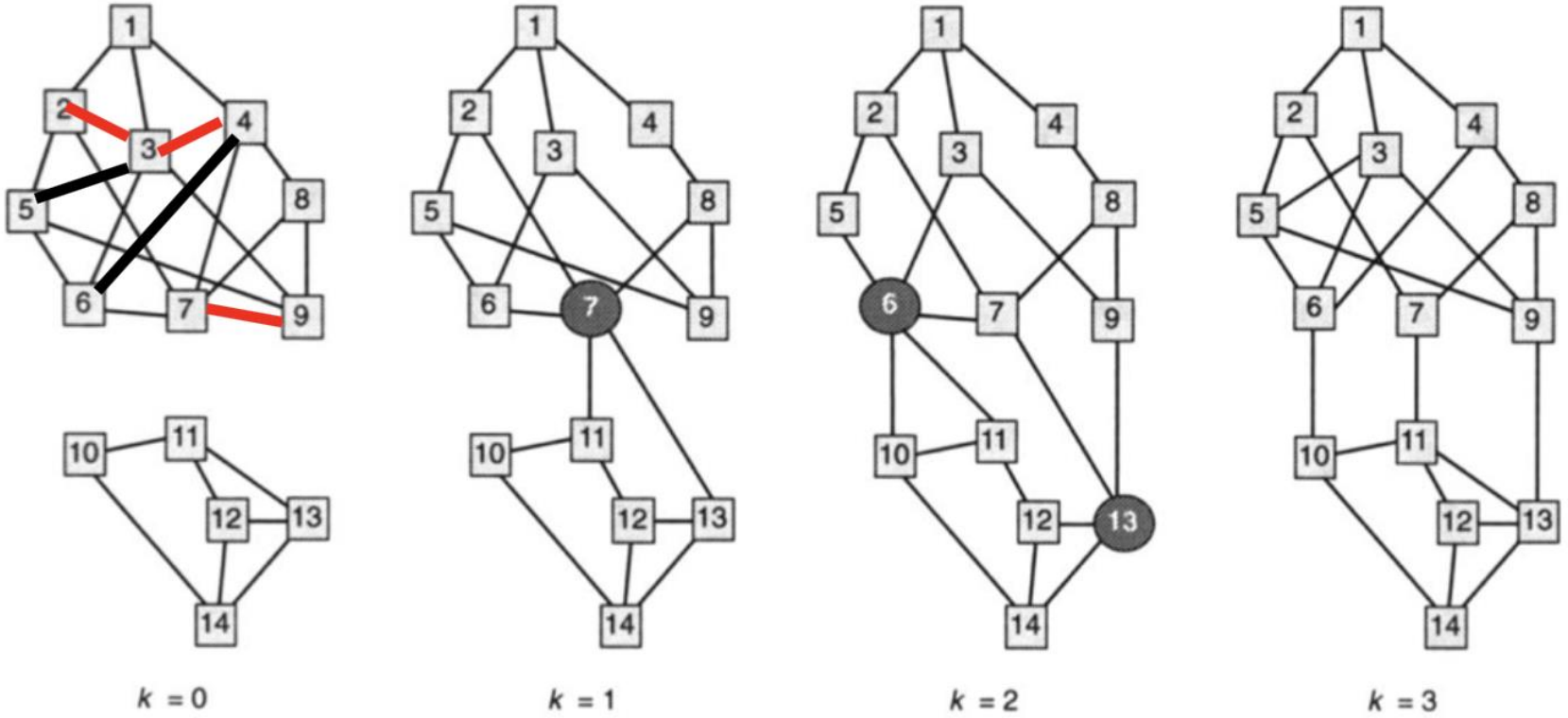
- Social networks have ‘short global path lengths, high local clustering, and skewed degree distributions’ (Watts 2004)
- Degree distribution
  - e.g Instagram followers: median c150–200; max 643 million
- Local clustering
- Global path lengths …

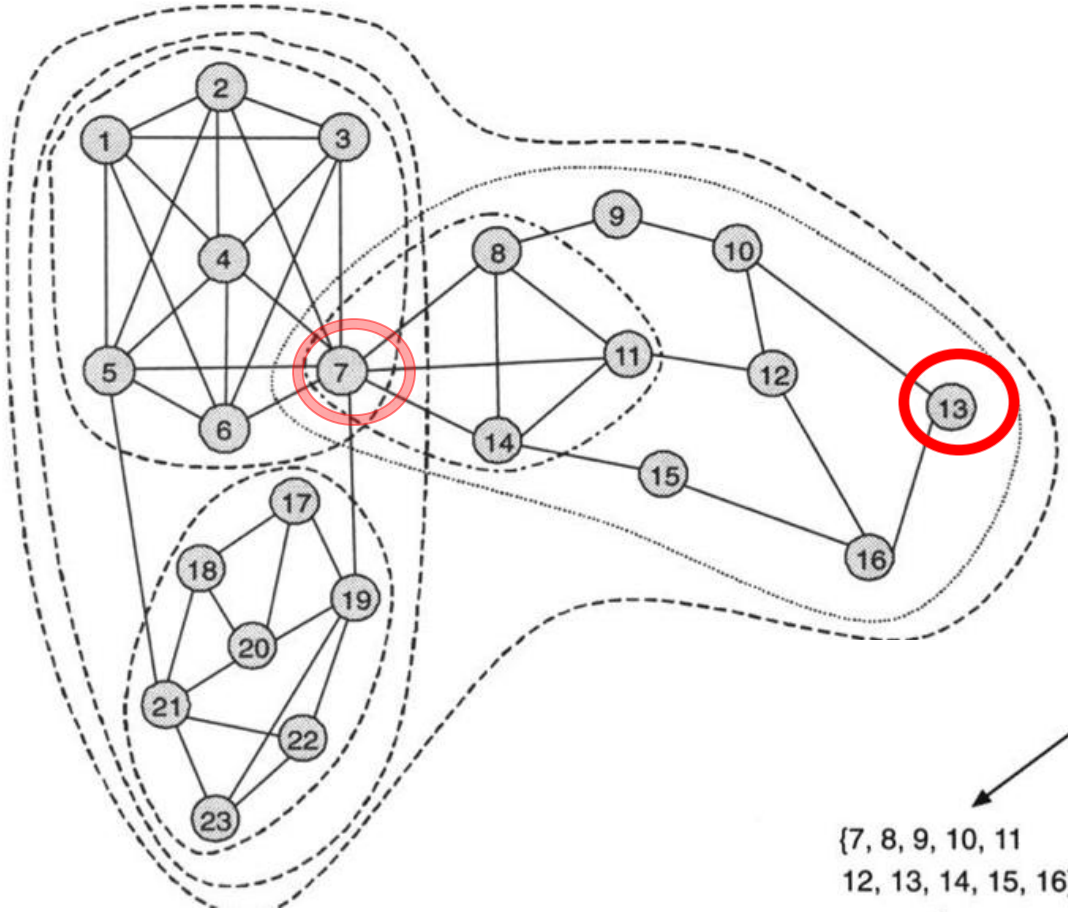
- Milgram's (1967) experiment: ask someone in Omaha NE to forward a letter to a named stockbroker in Boston MA
  - supposedly average 5.9 steps to get there (popularized as "six degrees of separation")
  - most letters lost (78/96), most subjects close!
  - email replication: 5–7 steps median, only 1.5% reach (Dodds, Muhamad, & Watts 2003)
- Mathematically, random bridges dramatically reduce global path length

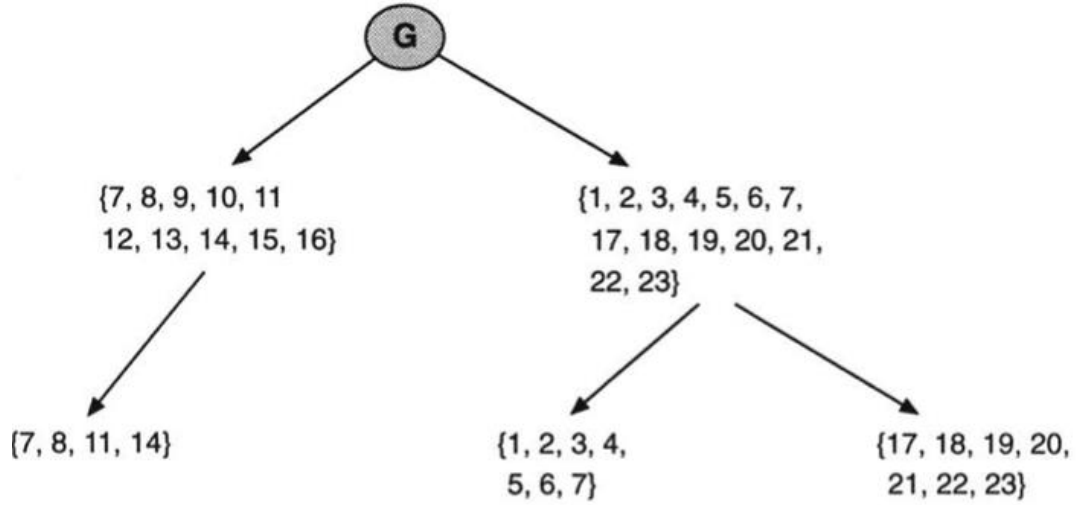


1. Clustering and integration

- Network analysis can define one component of Durkheim's integration (different from density of ties)
- 'A group's structural cohesion is equal to the minimum number of actors who, if removed from the group, would disconnect the group' (Moody & White 2003)



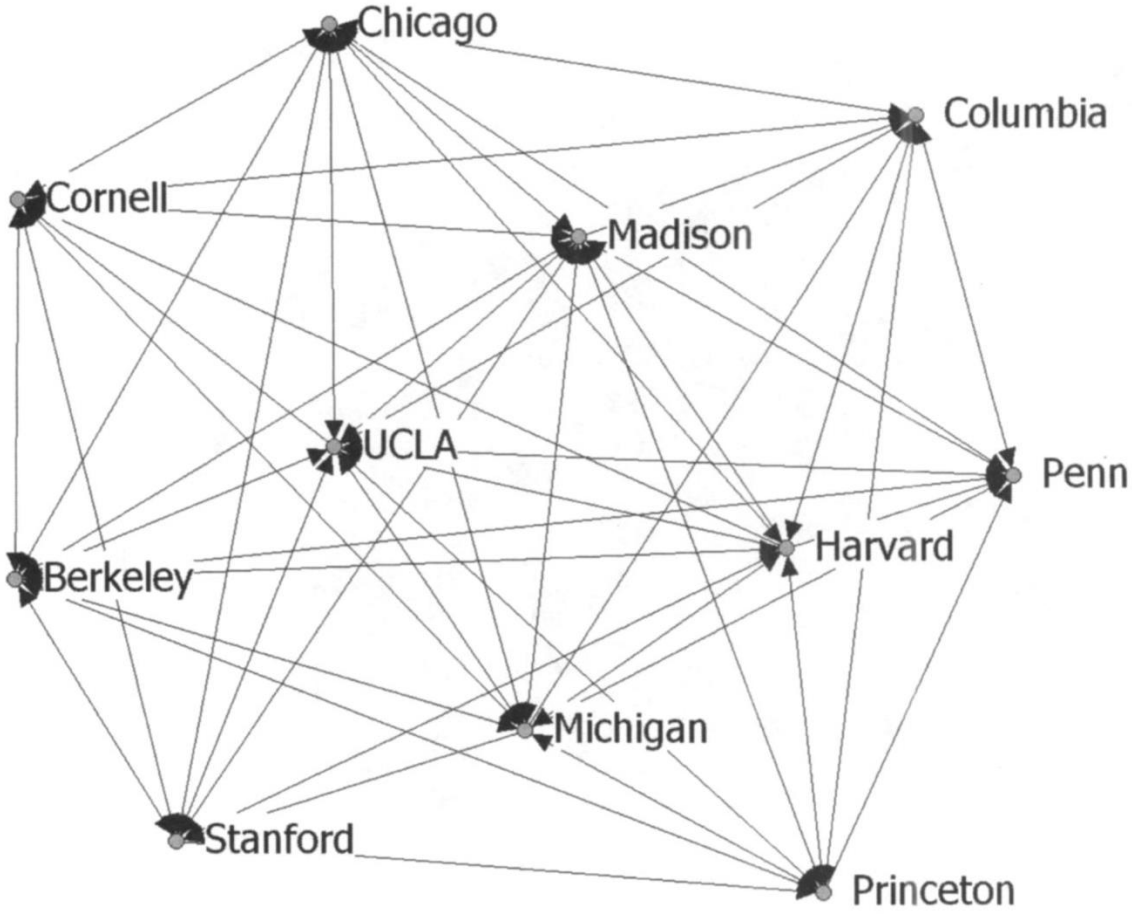




- Students in American high schools: the deeper a student was nested within cohesive friendship blocks, the more s/he identified with the school

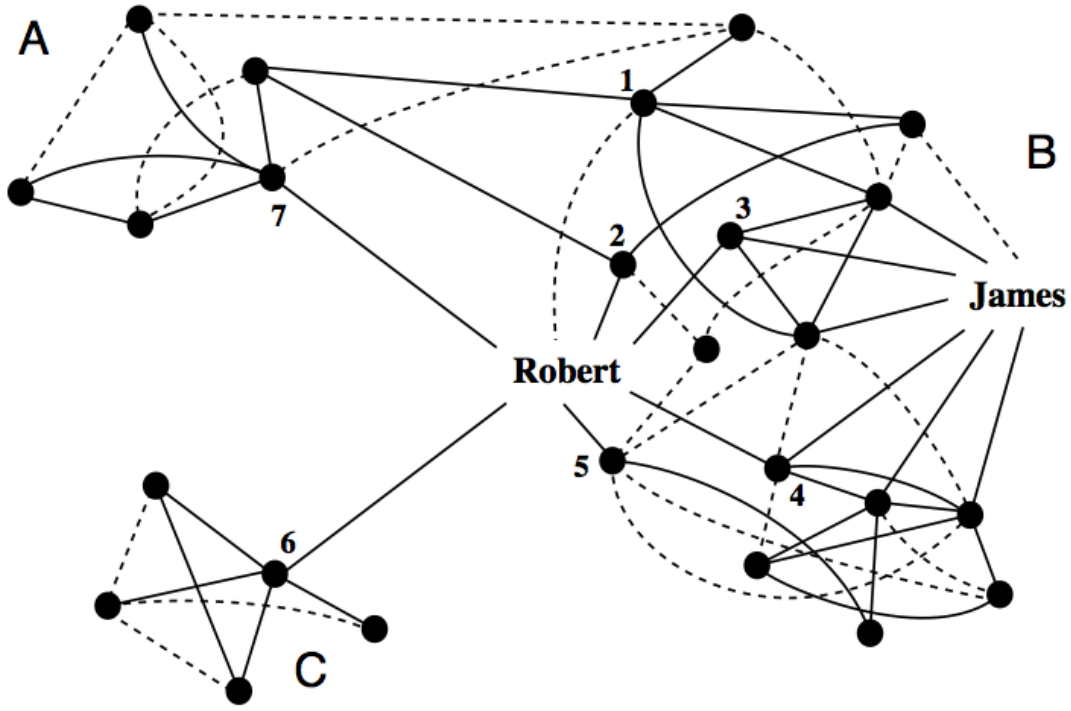
Entities connected by individuals

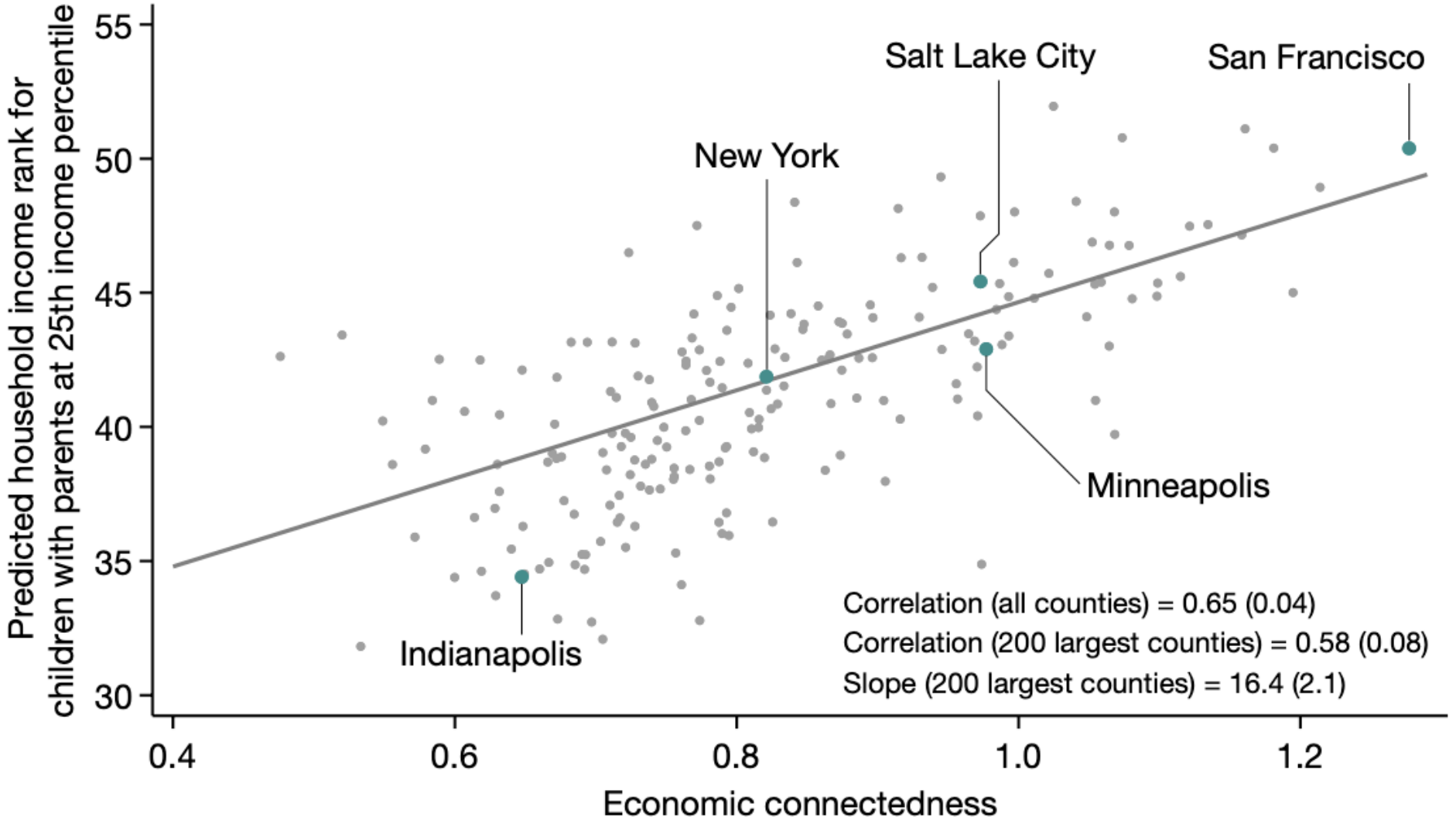
- Strong embeddedness: A => B **and** B => A (Grannis 2009)
- 124 U.S. sociology departments producing PhDs, connected by hiring
  - more cycles (1–6) of strong embeddedness
    = greater prestige
  - core at 6th level:



2. Bridging and advantage

- e.g. James and Robert have the same number of connections, but Robert also bridges clusters (Burt 2005)
- Burt demonstrates that managers who span "*structural holes*" have better performance evaluations, higher pay, better ideas
  - a bridge/broker has competitive advantage (Burt calls this "social capital")
  - note difference from collective definition (e.g. Putnam's)





EC—people *below* median income: relative proportion of their Facebook friends who are *above* median income—predicts income mobility (Chetty et al. 2022)

Bridges tend to be weak

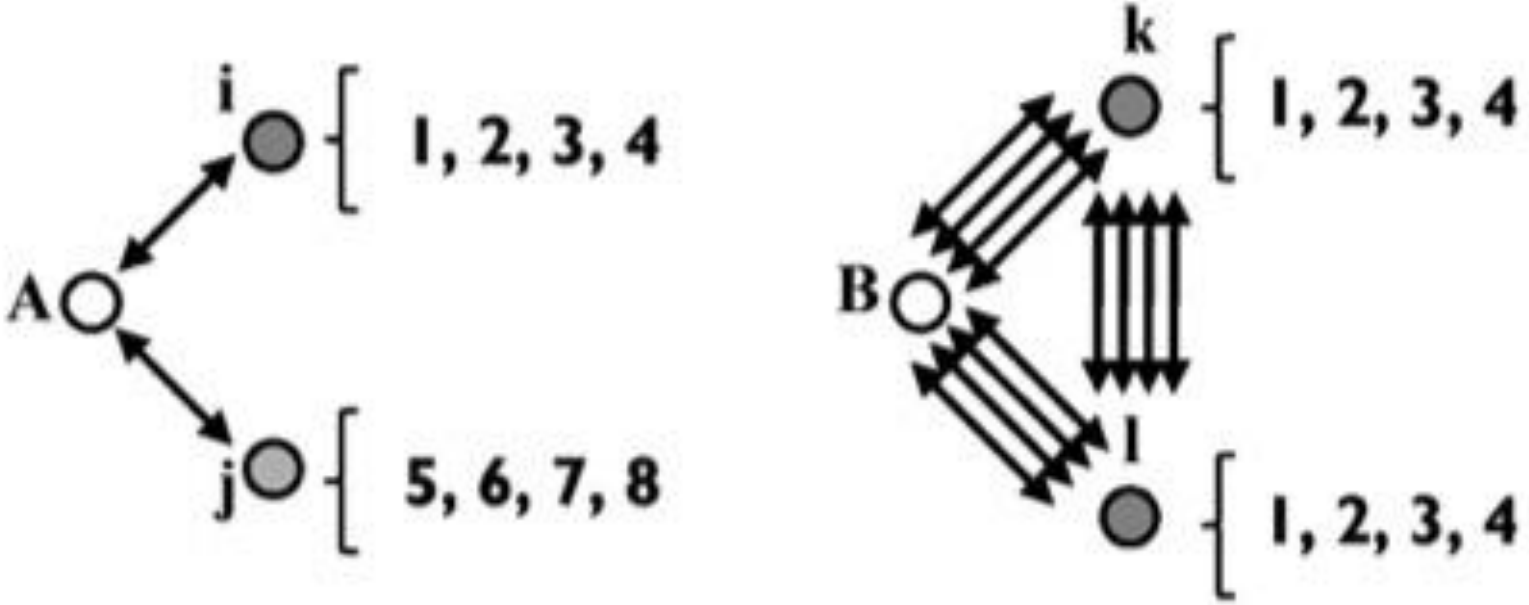
- ‘the stronger the tie between A and B, the larger the proportion of individuals … to whom they will both be tied’ (Granovetter 1973)
  - if A spends time with B, and B spends time with C,
    then A and C will tend to spend time together
  - if A likes B, and B likes C,
    then A and C will tend to like each other

=> information tends to flow through weak ties

- professionals get jobs through acquaintances rather than friends (Granovetter 1973)

- Caveat: tradeoff between network diversity and channel bandwidth (Aral & Van Alstyne 2011)

As the Diversity-Bandwidth Tradeoff Increases: Constrained-High Bandwidth Ties Are Preferred

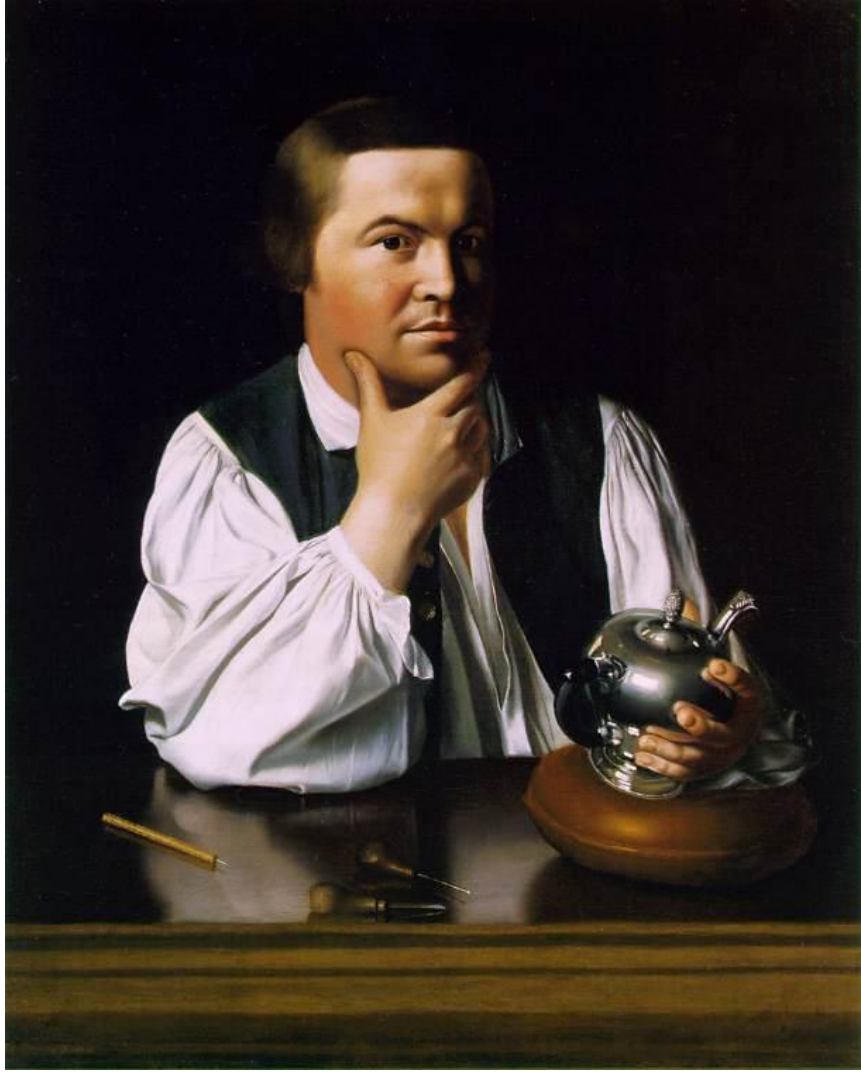


E[A] = 2 < E[B] = 4

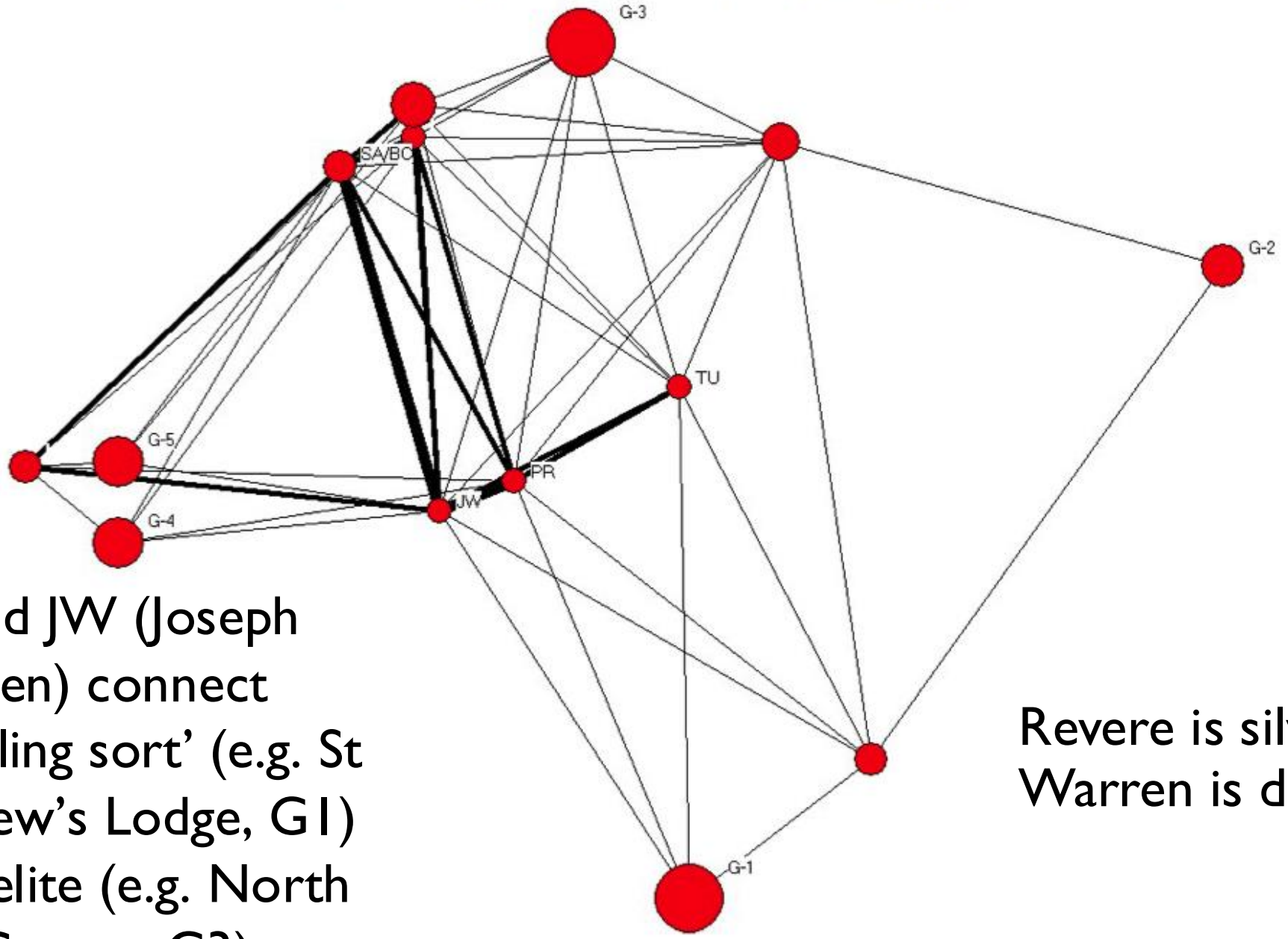
B's greater bandwidth overwhelms A's advantage of bridging pools of novel information.

Bridges and collective action

- Paul Revere famous for his midnight ride in 1775, warning militias in Lexington and Concord that British troops were coming
  - simply due to chance or personality?
- Han (2009) reconstructs social networks of pre-revolutionary Boston using membership of five organizations



Network Structure of the Revolutionary Movement in Boston:
(a) With All Blocs (*Density* = .725; *Connectivity* = 5. 253)



PR and JW (Joseph Warren) connect 'middling sort' (e.g. St Andrew's Lodge, G1) with elite (e.g. North End Caucus, G3)

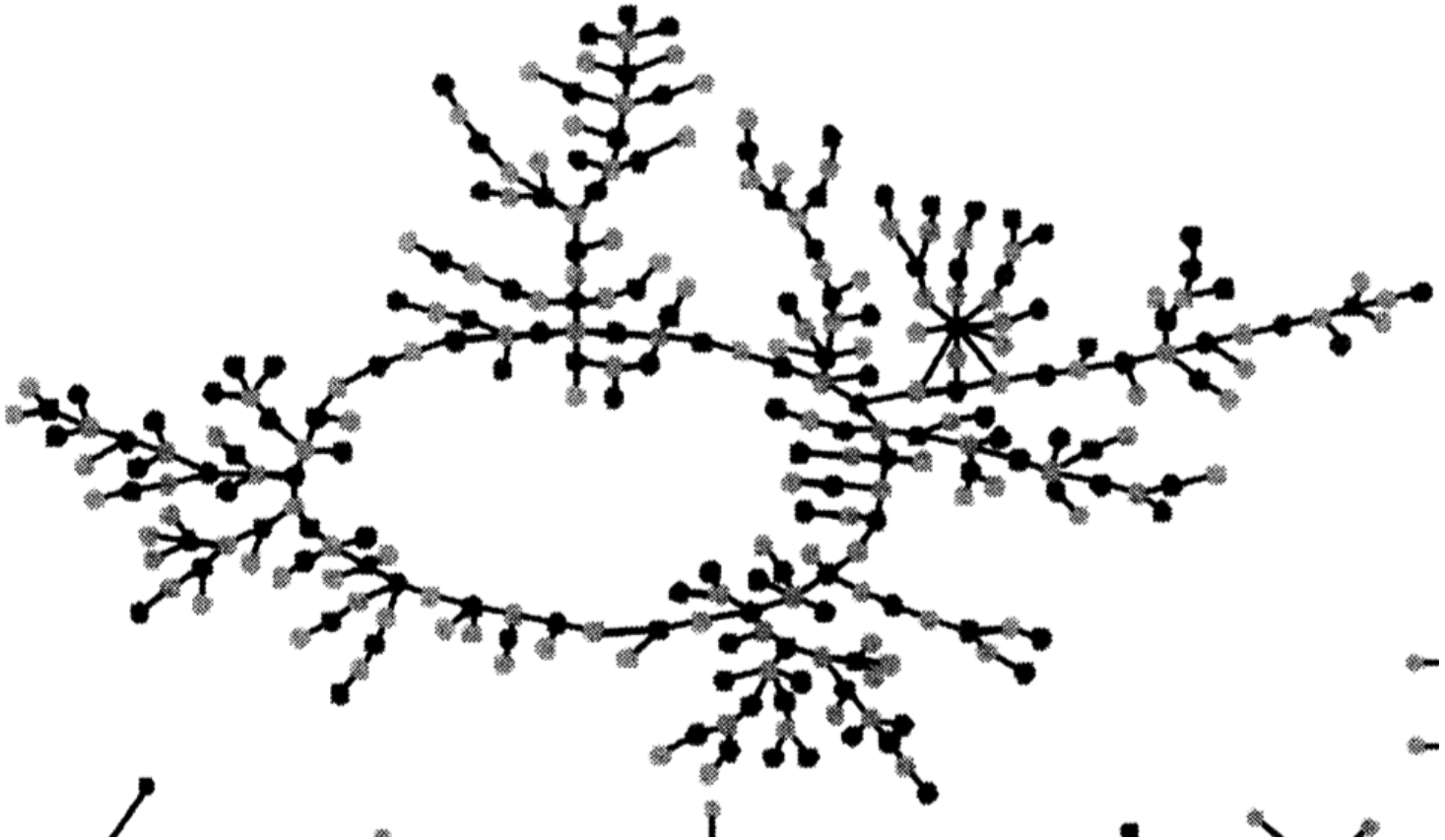
Revere is silversmith, Warren is doctor

3. Explaining networks

If action is explained by social networks, what explains the network? (Rivera, Soderstrom, & Uzzi 2010)

- Homophily: 'a tendency for friendships to form between those who are alike in some designated respect' (Lazarsfeld & Merton 1954)
  - ambiguous, best to conceive narrowly by individual preference
- Proximity
  - geography space
  - foci of activity: 'social, psychological, legal or physical objects around which joint activities are organized' (Feld 1981)

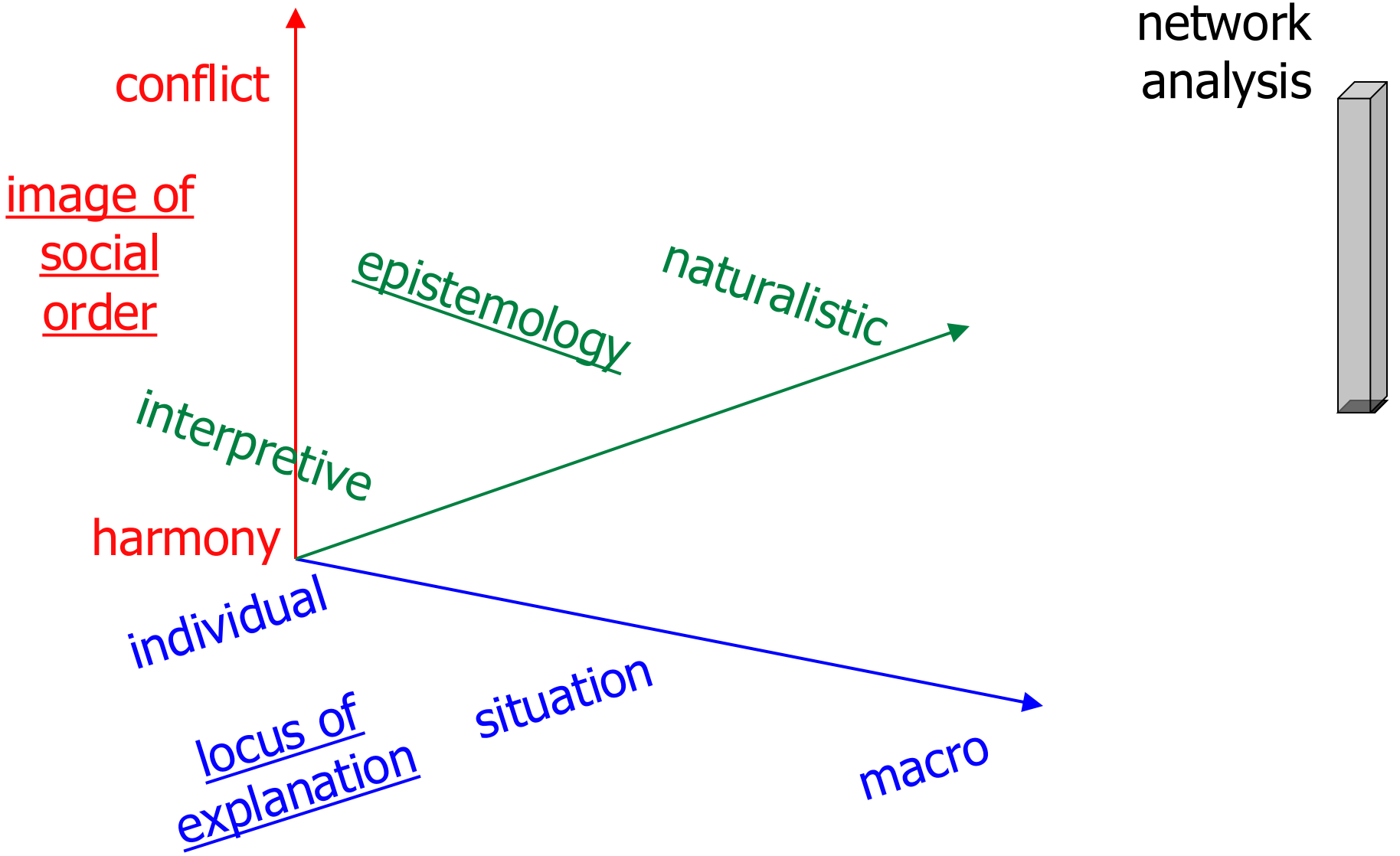
- Reciprocity: directed ties tend to be reciprocated
- Closure or transitivity (cf. Granovetter 1973; Heider 1946)
  - balanced triads:
    - my friend's friend is my friend + + +
    - my friend's enemy is my enemy + - -
  - unbalanced triads:
    - my friend's enemy is my friend + - +
    - my enemy's enemy is my enemy - - -
  - network evolves towards greater balance



Adolescent sexual networks (Bearman, Moody, & Stovel 2004)

- don't have sex with your ex partner's current partner's ex partner!

- Implications for controlling sexually transmitted diseases: break giant component
- Macro <=> micro


conflict
image of social order
harmony
epistemology
naturalistic
interpretive
individual
locus of explanation
situation
macro
network analysis

Summary

- Social structure can be analyzed as a social network, constituted by individuals (or by organizations linked through individuals)
  - network *cannot* be derived from the aggregated attributes of individuals
- Networks consist of
  - dense clusters
  - bridged by a few ties, most often weak
    - providing individual advantage and facilitating collective action

Any questions about the MSc in Sociology or MPhil in Sociology & Demography —deadline 9 January—email me!

Questions

- Can social networks explain how individuals can overcome the problem of collective action?
- How useful is it to theorize "society" as a series of overlapping social networks?
- Why are 'weak ties' so important in social networks?
- How can theories of social networks incorporate structural inequality?
- Can evolutionary psychology help to explain the importance of social networks?
- Are social networks a type of 'capital'?

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