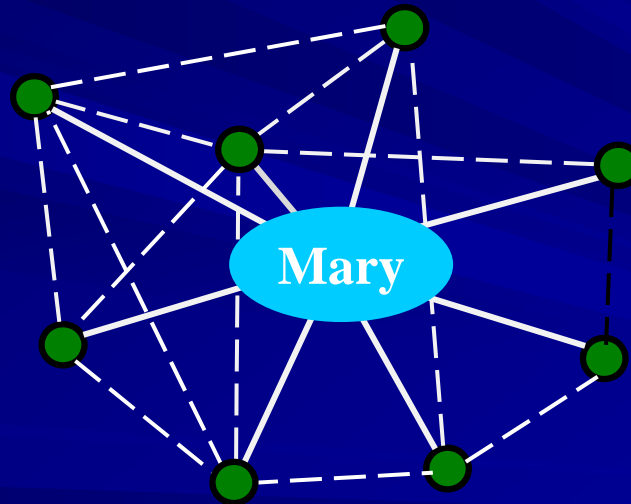


# Ego Networks

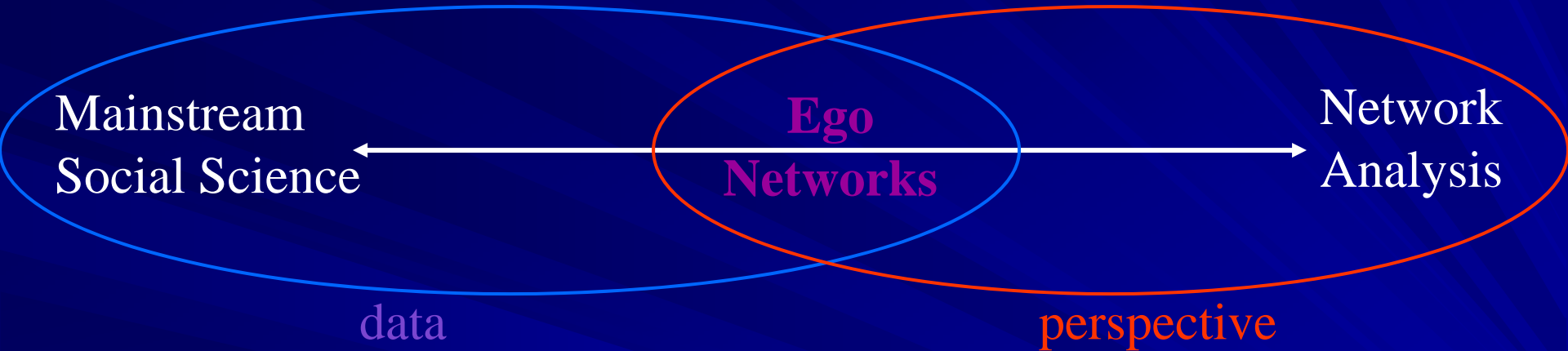
Steve Borgatti

# What is an ego network?

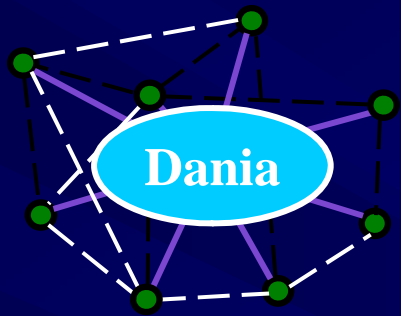
- A focal actor (the respondent, called ego), together with the actor's contacts (called alters), and, often, a limited set of ties among the alters



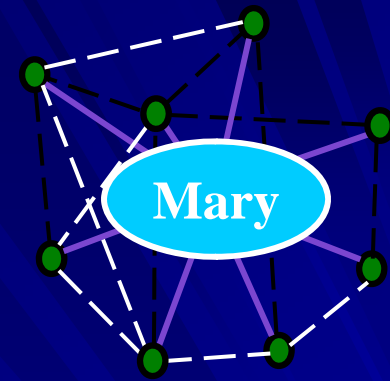
# Ego Network Analysis



- Combine the perspective of network analysis with the data of mainstream social science



# Ego Networks



- (Ideally random) sample of nodes
  - Each sampled node called an “ego”
- Each is asked for set of contacts called “alters”
- Ego also asked (usually) about ties among alters
- Connections between ego’s or between alters of different egos are not recorded
  - Each ego is a world in itself

# Data Collection

- Name (or position) generator
  - Obtain complete list of alters
- Name (position) interpreter
  - Systematic assessment of social relations with each alter
- Alter attributes
- Alter-Alter ties
  - Time-consuming!
  - Ego's perception

# Ego Network Data Collection

- (Random) survey of members of a population
- Ask respondents (egos) about their contacts (alters)
  - E.g., who they confide important matters with
  - Contacts identified by nicknames or aliases
- Characterize relationship with each alter
- Obtain attribute data about each alter (ego's perception)
- Optionally obtain ego's perception of which alters have ties with which other alters

# Ego vs Full Data Collection

## Ego Network

- Never use roster method (always unaided recall)
- Ask many relational questions
- Ask relational questions in two stages
- Ask respondents to provide data about their alters
  - Because alters are not interviewed

## Full Network

- Use rosters whenever possible
- Typically ask very few questions
- Ask questions only once
- Only ask respondents about themselves
  - Because alters will be interviewed as well

# Types of Analyses

## ■ Size & Strength

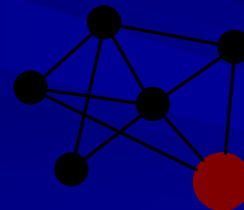
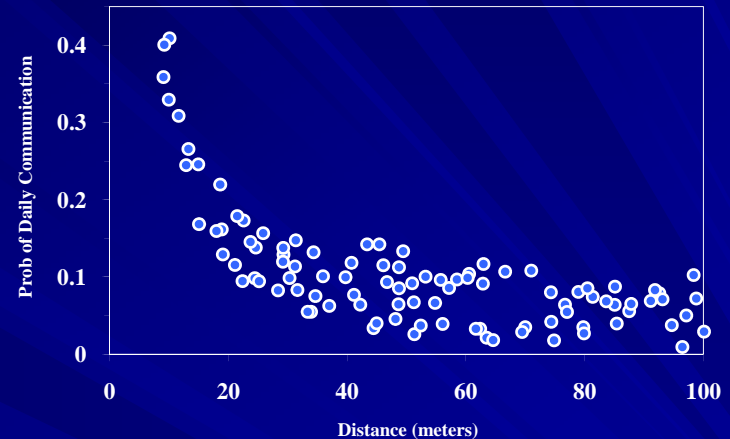
## ■ Composition

- Selection
  - e.g., propinquity, homophily
- Influence
  - E.g., testing for diffusion effects

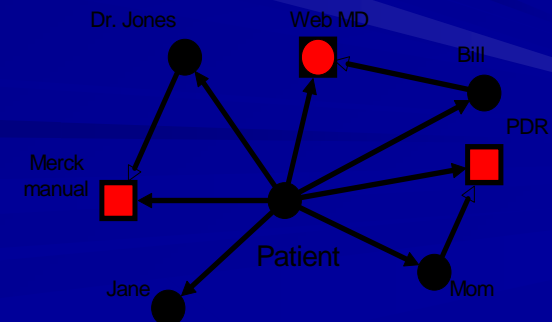
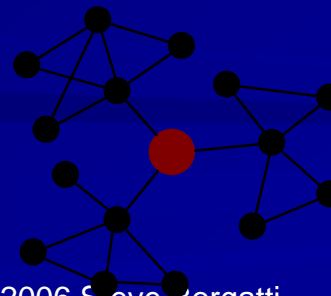
- Heterogeneity
- Quality

## ■ Shape

- Density
- Components
- Holes



	Male	Female
Male	1245	748
Female	970	1515





# E-I Index

- We can measure the relative homophily of a group using the E-I index

$$\frac{E - I}{E + I}$$

- E is number of ties between groups (External)
- I is number of ties within groups (Internal)
- Index is positive when a group is outward looking, and negative when it is inward looking
  - E-I index is often negative for close affective relations, even though most possible partners are outside a person's group

# Krackhardt & Stern Experiment

- MBA class divided into two independent organizations
  - Each subdivided into 4 departments, with some interdependencies
- Measure of overall performance
  - financial performance, efficiency, human resource metrics
- Staffing controlled by the experimenter
  - "natural org" placed friends together within departments
  - "optimal org" separated friends as much as possible (high E-I value)
- As game unfolded, the experimenter introduced organizational crises, such as imposing layoffs

# Krackhardt & Stern Results

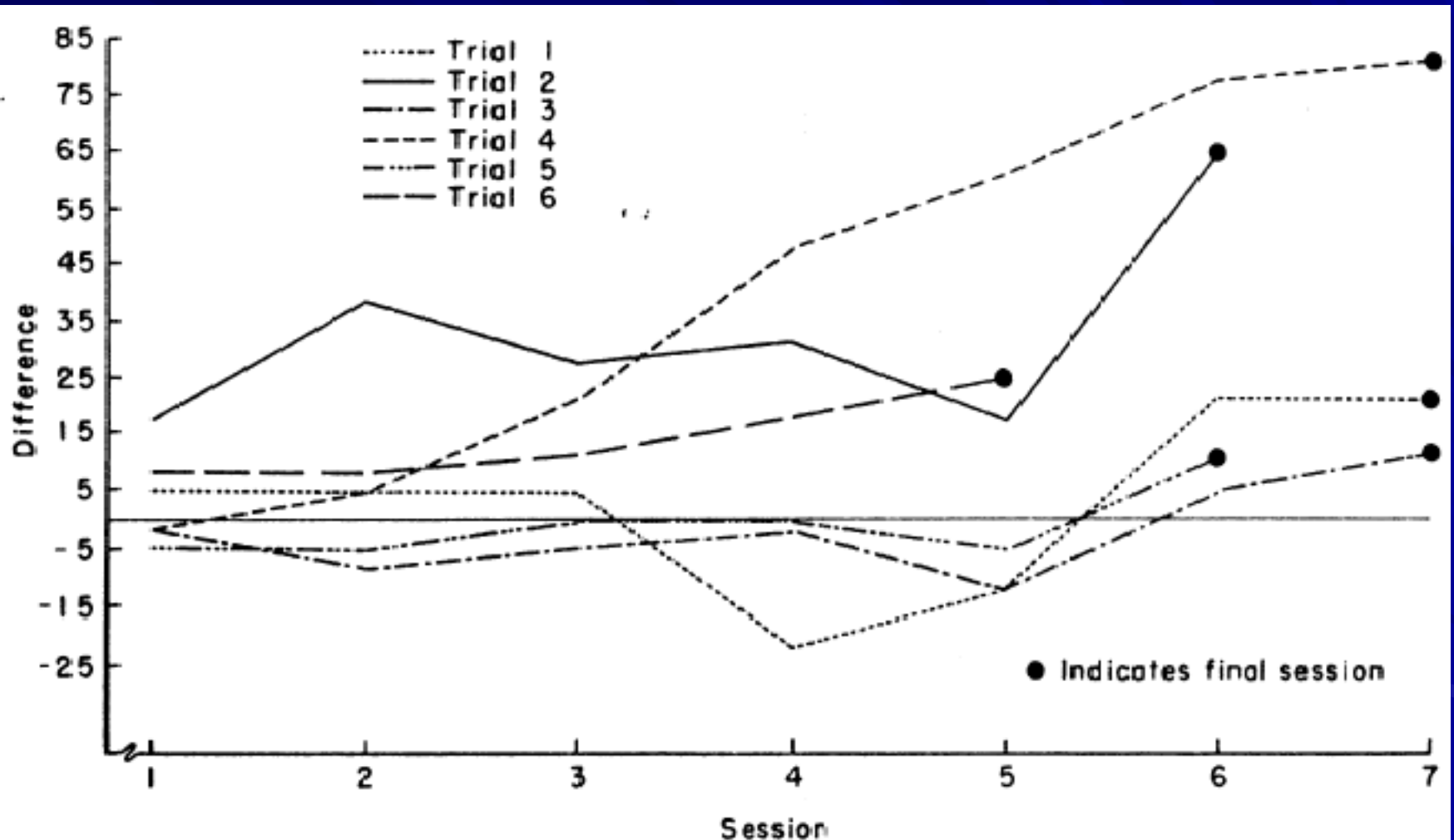
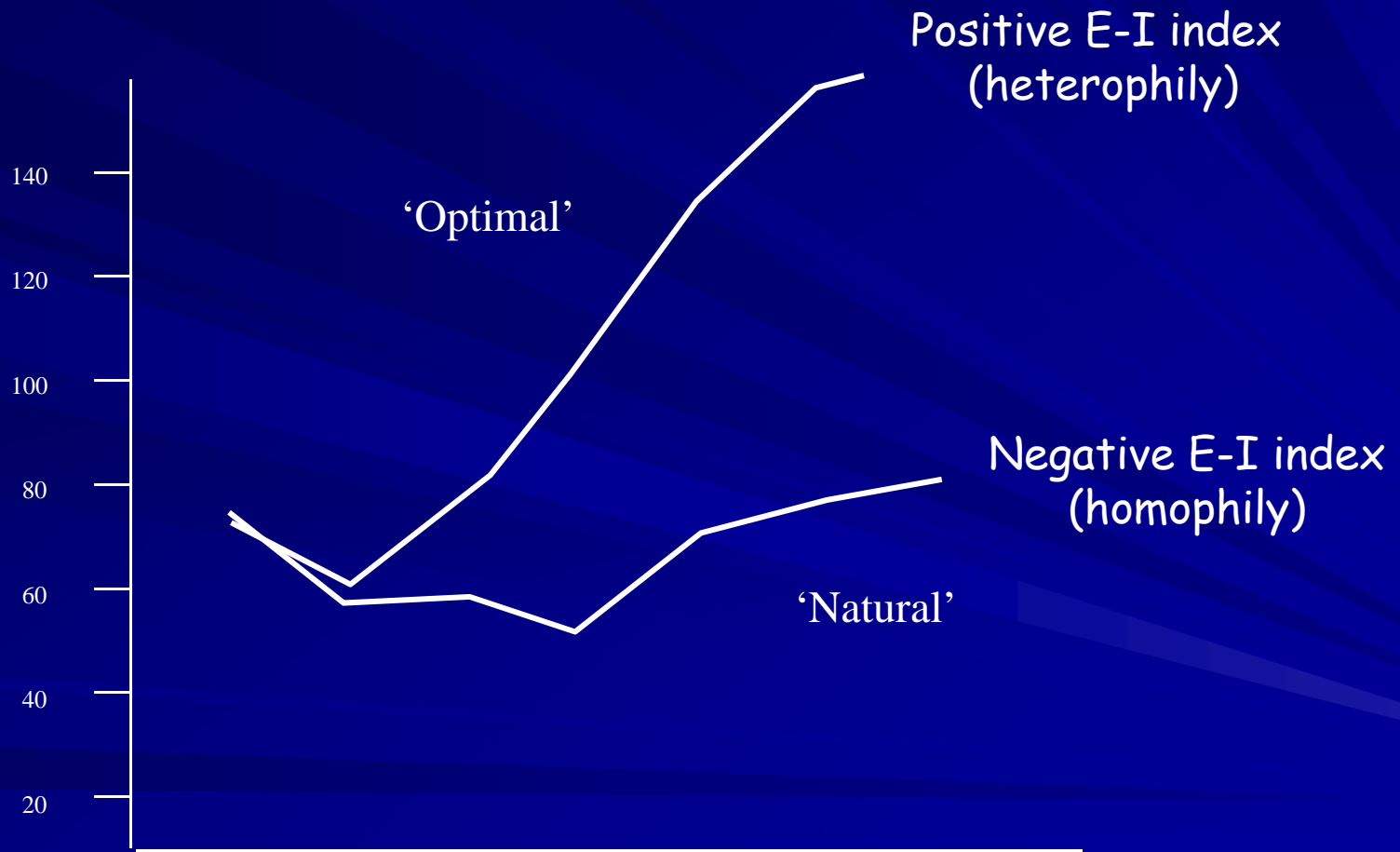


Figure 1. Difference between Optimal and Natural Performance Indicators for Each Session in Each Trial

# Experimental Results



6 trials at 3 universities. Results shown for most dramatic trial.

# Why?

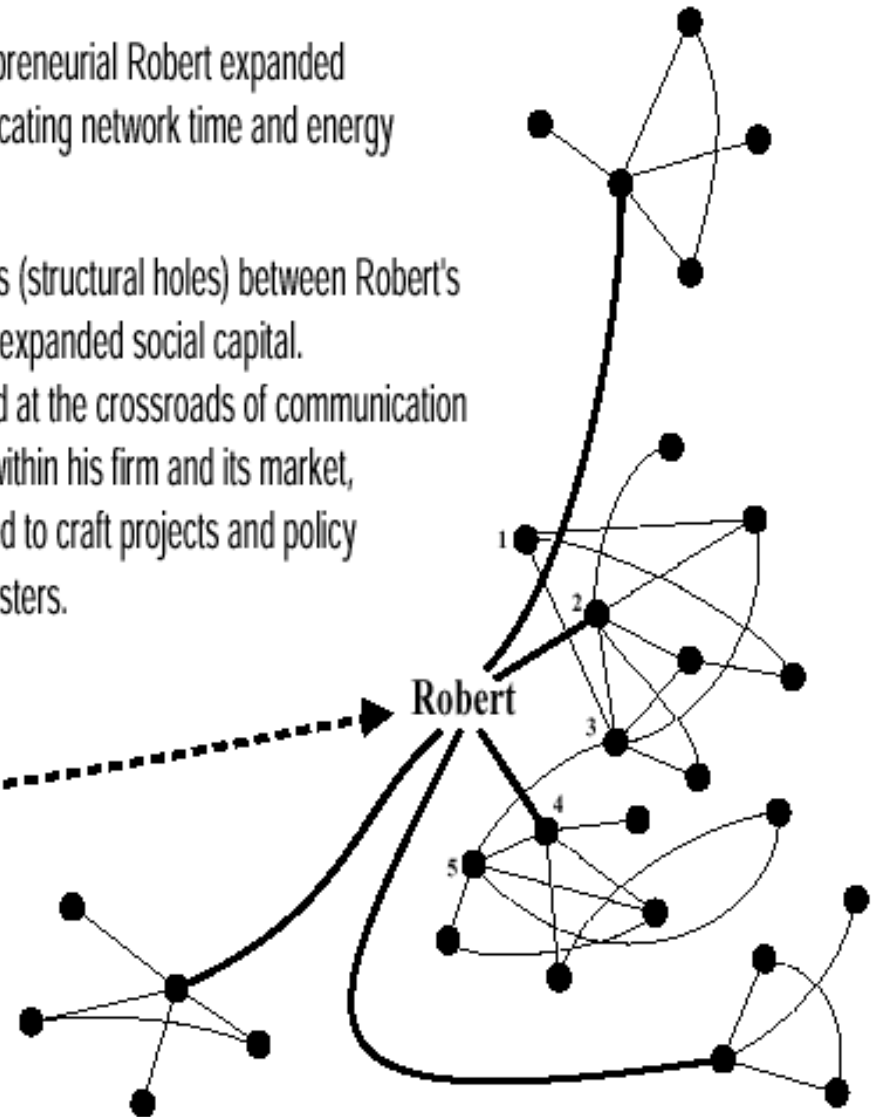
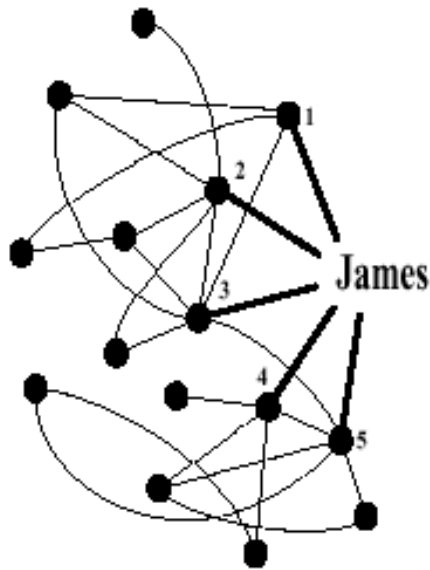
- In crises, organizations need to share information and solve problems across departments
- With positive E-I index, we see joint problem-solving and information sharing, trust
- With negative E-I index, we see blaming, information hoarding, us vs them
- Therefore, performance is better in orgs with positive E-I index

# Structural Holes

Robert took over James' job. Entrepreneurial Robert expanded the social capital of the job by reallocating network time and energy to more diverse contacts.

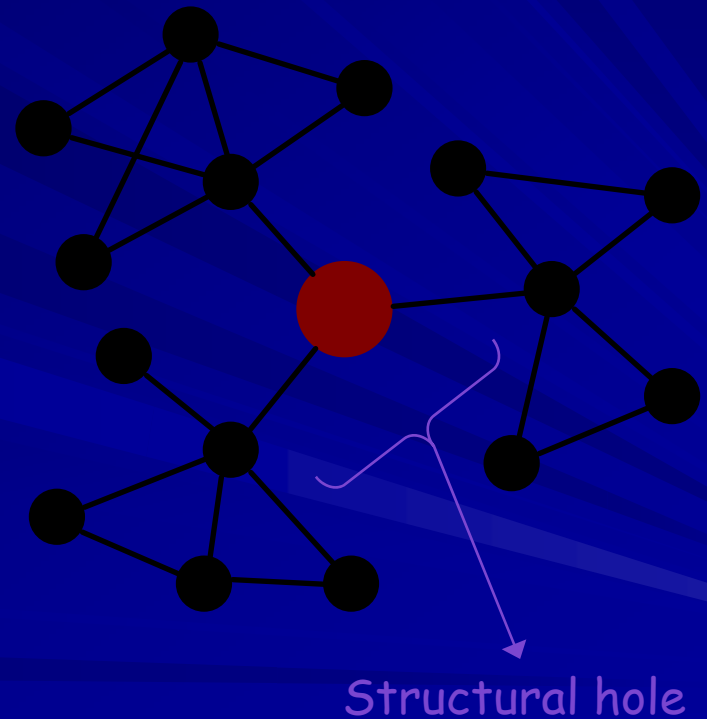
It is the weak connections (structural holes) between Robert's contacts that provide his expanded social capital. Robert is more positioned at the crossroads of communication between social clusters within his firm and its market, and so is better positioned to craft projects and policy that add value across clusters.

Research shows that people like Robert, better positioned for entrepreneurial opportunity, are the key to integrating across functions and across the people of increasingly diverse backgrounds in today's flatter organizations. In research comparisons between managers like James and Robert, it is the people like Robert who get promoted faster, earn higher compensation, receive better performance evaluations, and perform more successfully on teams.

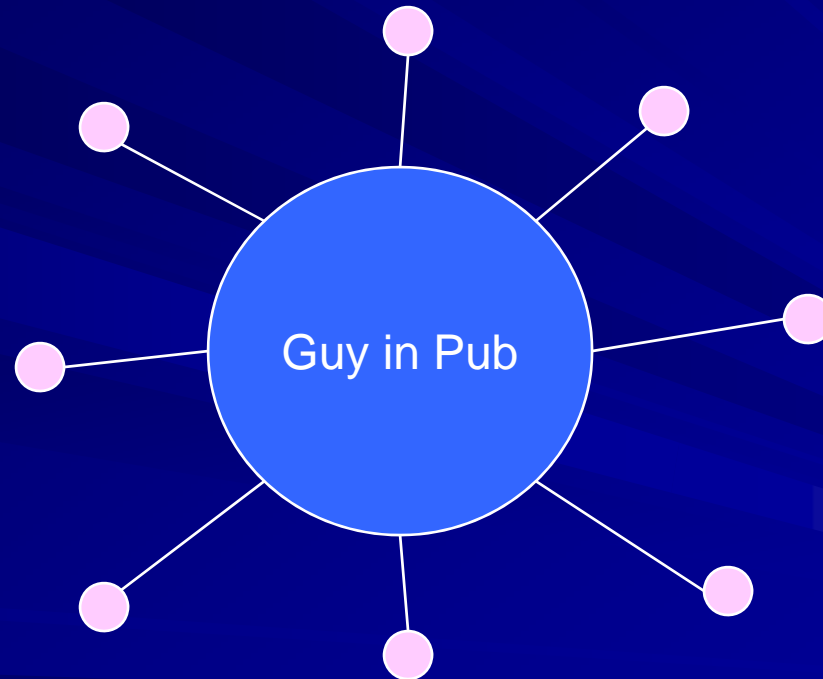


# Structural Holes

- Basic idea: Lack of ties among alters may benefit ego
- Benefits
  - Autonomy
  - Control
  - Information



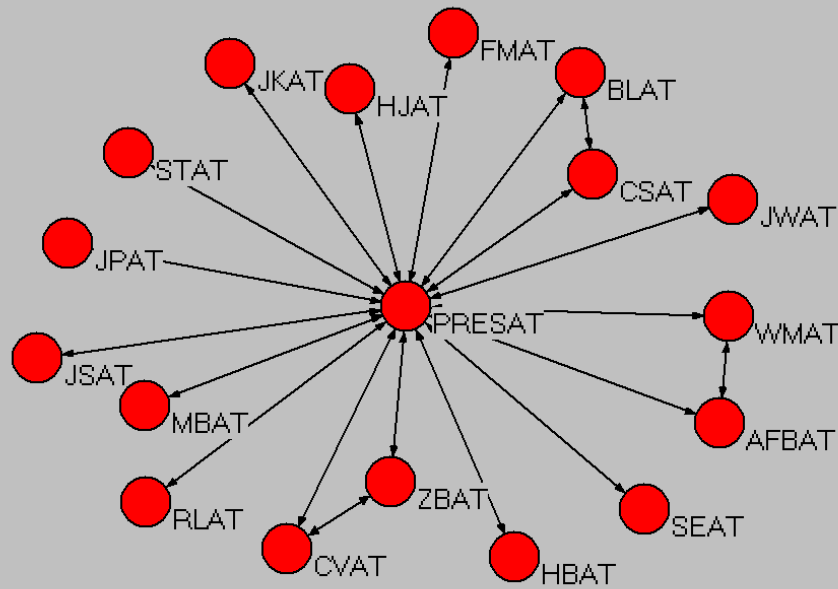
# Autonomy





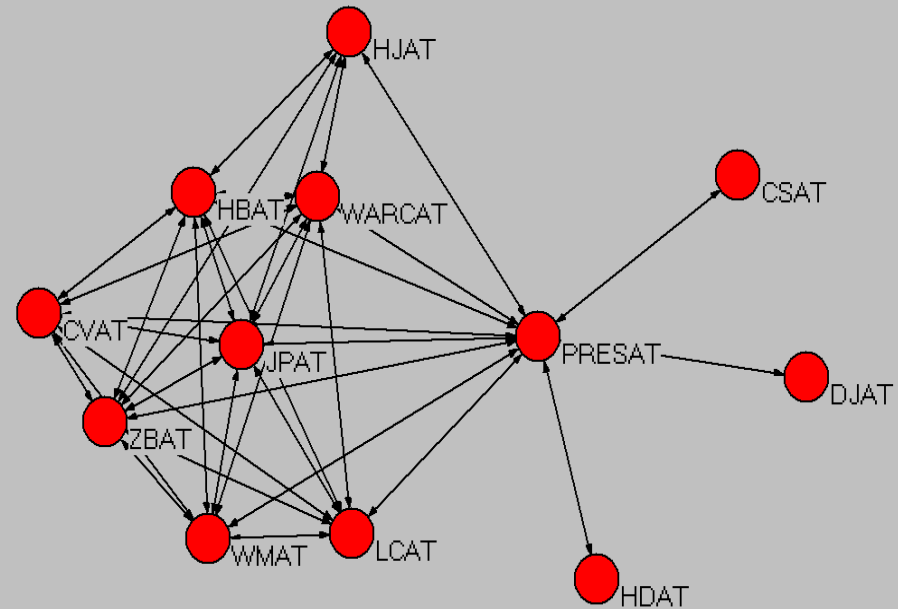
# Control Benefits of Structural Holes

White House Diary Data, Carter Presidency



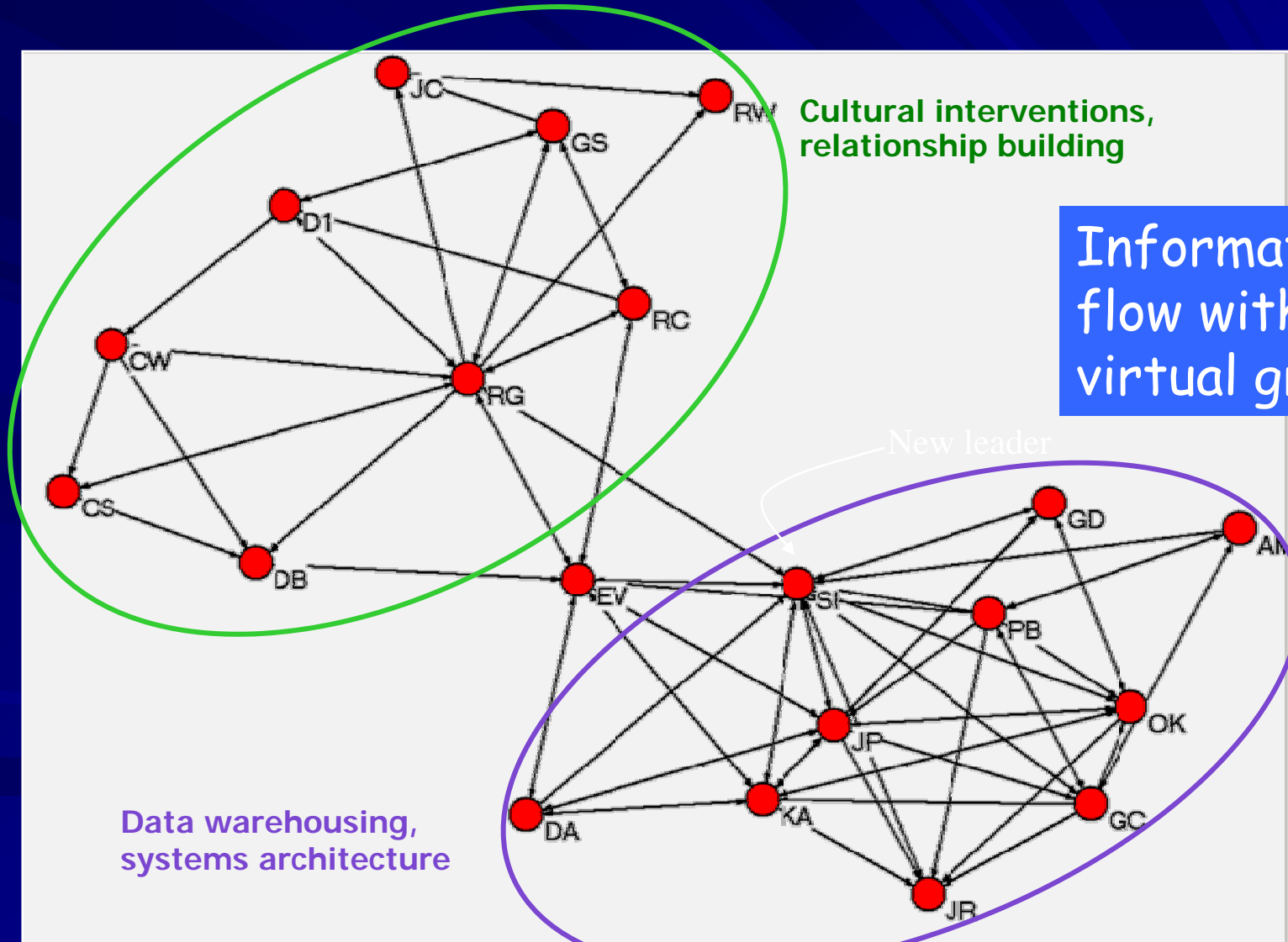
Year 1

Data courtesy of Michael Link



Year 4

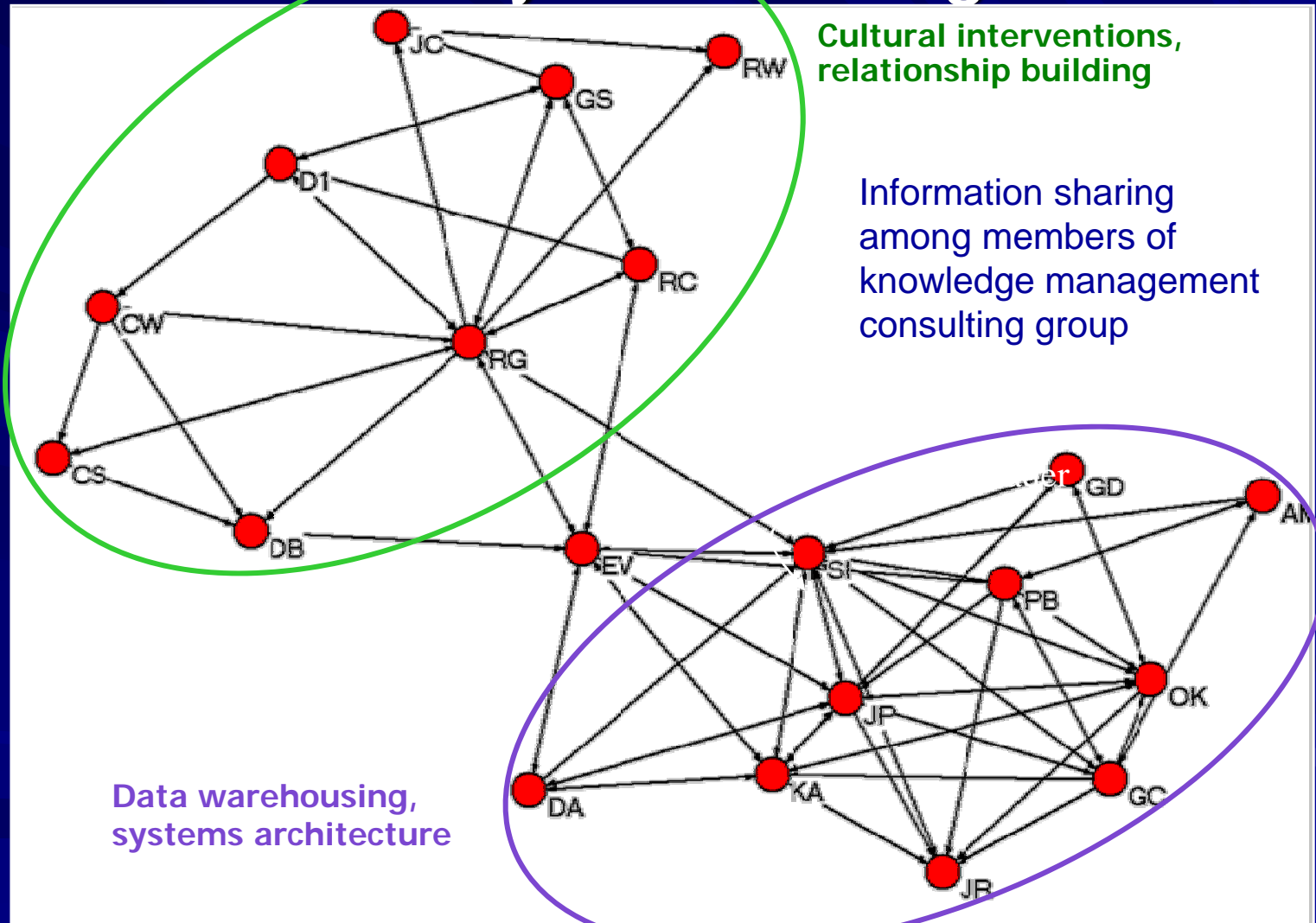
# Information & Success



# Information Benefits

- (Assume a fixed relational energy budget)
- Direct connection to outsiders means earlier, more actionable knowledge
- Bridging position provides control of information, agenda
- Value from
  - Bringing across ready-made solutions
  - Analogizing from others' situations
  - Synthesizing others' thinking

# Case Study: Consulting Firm



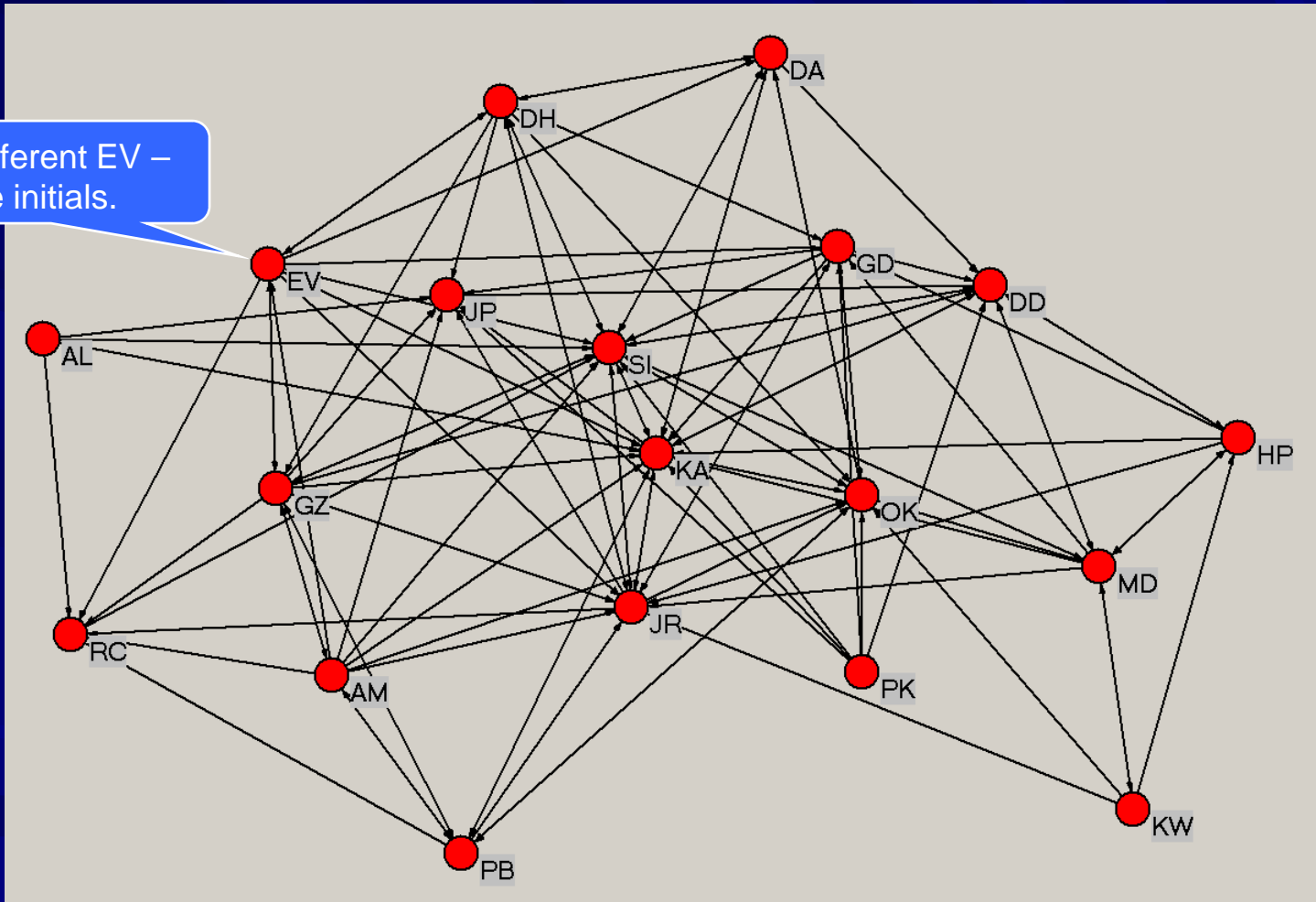
Cross, Parker, & Borgatti, 2002. Making Invisible Work Visible. *California Management Review*. 44(2): 25-46

# Changes Made

- Cross-staffed new internal projects
  - white papers, database development
- Established cross-selling sales goals
  - managers accountable for selling projects with both kinds of expertise
- New communication vehicles
  - project tracking db; weekly email update
- Personnel changes

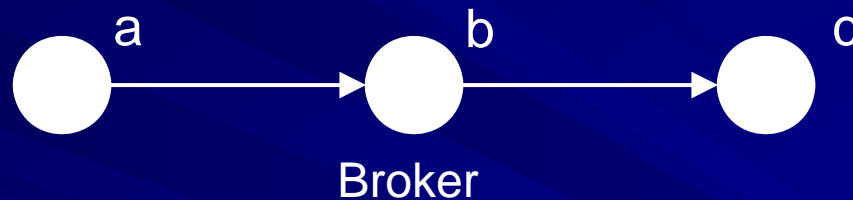
# 9 Months Later

Note: Different EV – same initials.



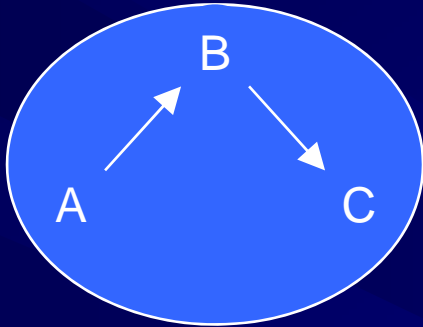
Cross, Parker, & Borgatti, 2002. Making Invisible Work Visible. *California Management Review*. 44(2): 25-46

# Brokerage Roles

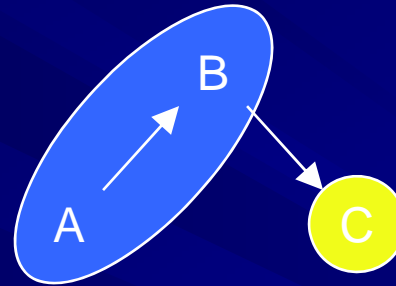


- Gould & Fernandez
- Broker is middle node of directed triad
- What if nodes belong to different organizations?

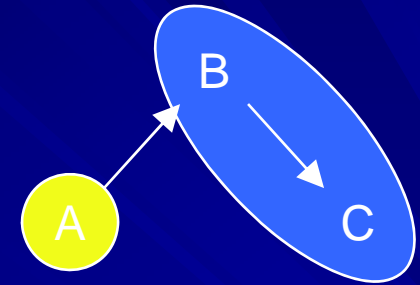
# Brokerage Roles



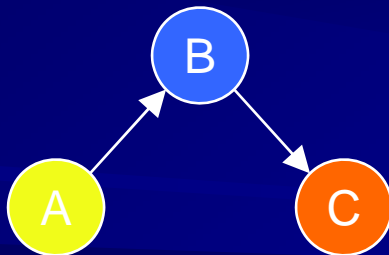
Coordinator



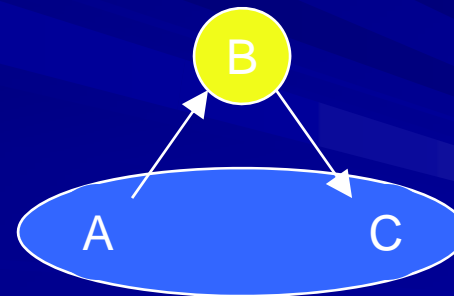
Representative



Gatekeeper



Liaison



Consultant



# Example

	Coord	Gate	Rep	Cons	Liais	Total
JB	3	17	1	0	3	24
TB	0	5	0	4	5	14
MC	1	0	0	0	0	1
CC	0	0	0	0	5	5
BD	1	0	40	0	0	41
TD	5	5	45	8	25	88
PD	0	0	0	0	0	0
JF	0	0	0	0	0	0
KG	7	22	9	0	15	53
SM	0	1	0	0	0	1
BS	1	0	0	0	0	1
AS	0	0	0	0	0	0
JT	0	0	0	0	0	0
PW	0	30	0	0	0	30
CW	0	6	0	3	5	14
TW	0	0	0	0	0	0
Total	18	86	95	15	58	272

# Role Profiles

Observed

