



Trust Beyond the Network

A generative
discussion

Ron Burt

you

Within the Network

Quick review of what we know about network correlates of trust. These slides are from teaching handouts (available at www.ronaldsburt.com). Handout title and page are on the left-hand sidebar.

Beyond the Network

These slides are from recent and forthcoming research papers.

Implications of behavior learned within the network (2 hypotheses)

Measurement

Results

Key points

Appendix Materials

Network Structure Maps Distribution of Information



Paul
Lazarsfeld
1901-1976



Bob Merton
1910-2003



Solomon Asch
1907-1996



Leon Festinger
1919-1989



Stanley
Schachter
1922-1997



Elihu Katz
1926 - 2021

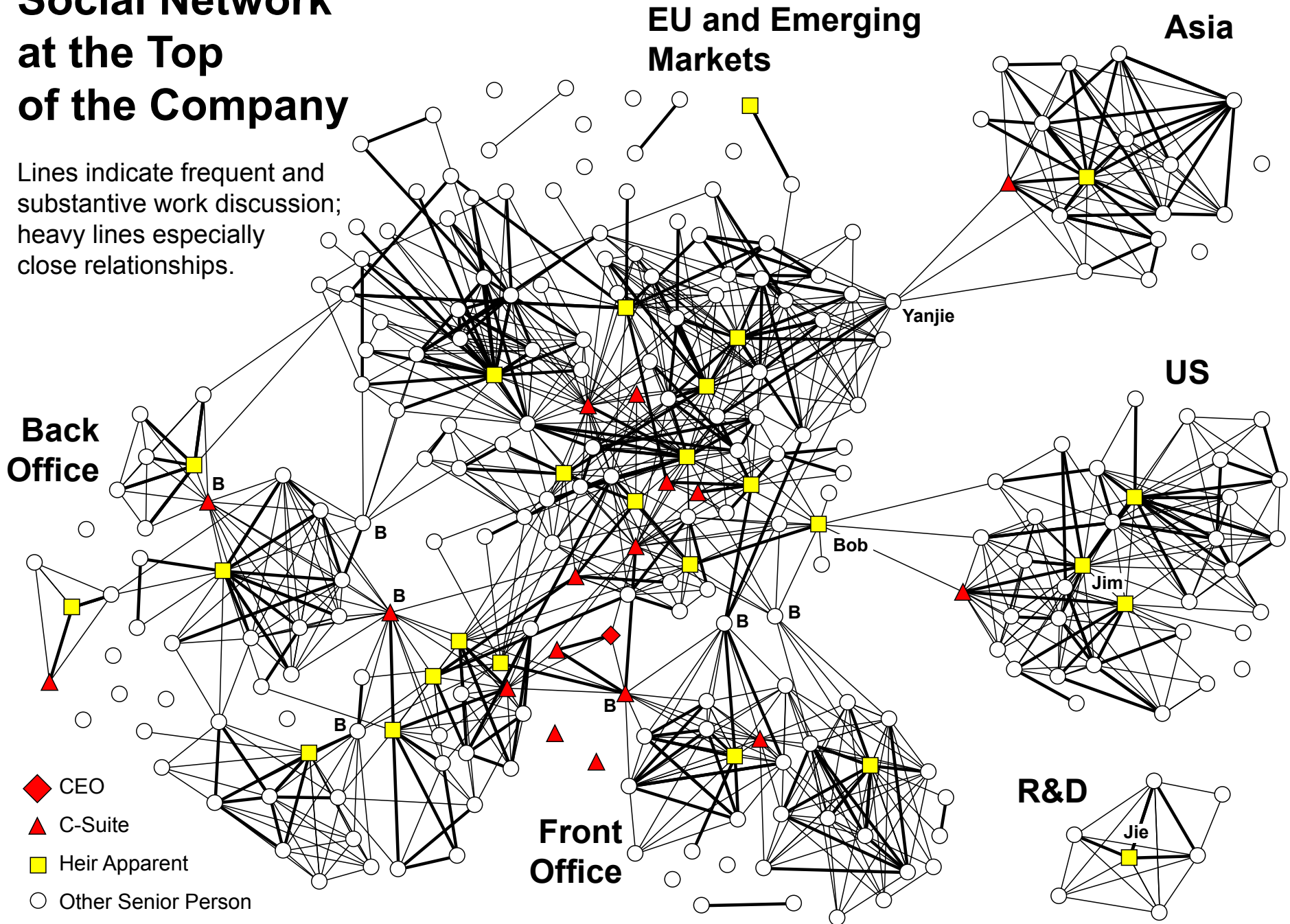
Network models of advantage are grounded in two facts about the social distribution of information from the 1950s “golden age” of social psychology (e.g., Festinger, Schachter & Back, 1950; Asch, 1951; Schachter, 1951; Katz & Lazarsfeld, 1955): (1) people cluster into groups as a result of contact opportunities defined by the places where people meet, and (2) communication is more frequent and influential within than between groups so that people in the same group develop similar views.

People tire of repeating arguments and stories explaining why they believe and behave the way they do. Within a group, people create systems of phrasing, opinions, symbols and behaviors defining what it means to be a member. Beneath the familiar arguments and experiences are new, emerging arguments and experiences awaiting a label, the emerging items more understood than said within the group. What was once explicit knowledge interpretable by anyone becomes tacit knowledge meaningful primarily to insiders. With continued time together, information in the group becomes “sticky” – nuanced, interconnected meanings difficult to understand in other groups (Von Hippel, 1994). Much of what we know is not easily understood beyond the colleagues around us. Holes tear open in the flow of information between groups. These holes in the social structure of communication, or more simply structural holes (Burt, 1992), are missing relations indicating where information is likely to differ on each side of the hole and not flow easily across the hole. In short, the bridge and cluster structure in social networks indicates where information is relatively homogeneous (within cluster) and where information is likely to be heterogeneous (between clusters).

From Burt, "Network disadvantaged entrepreneurs" (*Entrepreneurial Theory and Practice*, 2019, page 22)

Social Network at the Top of the Company

Lines indicate frequent and substantive work discussion; heavy lines especially close relationships.



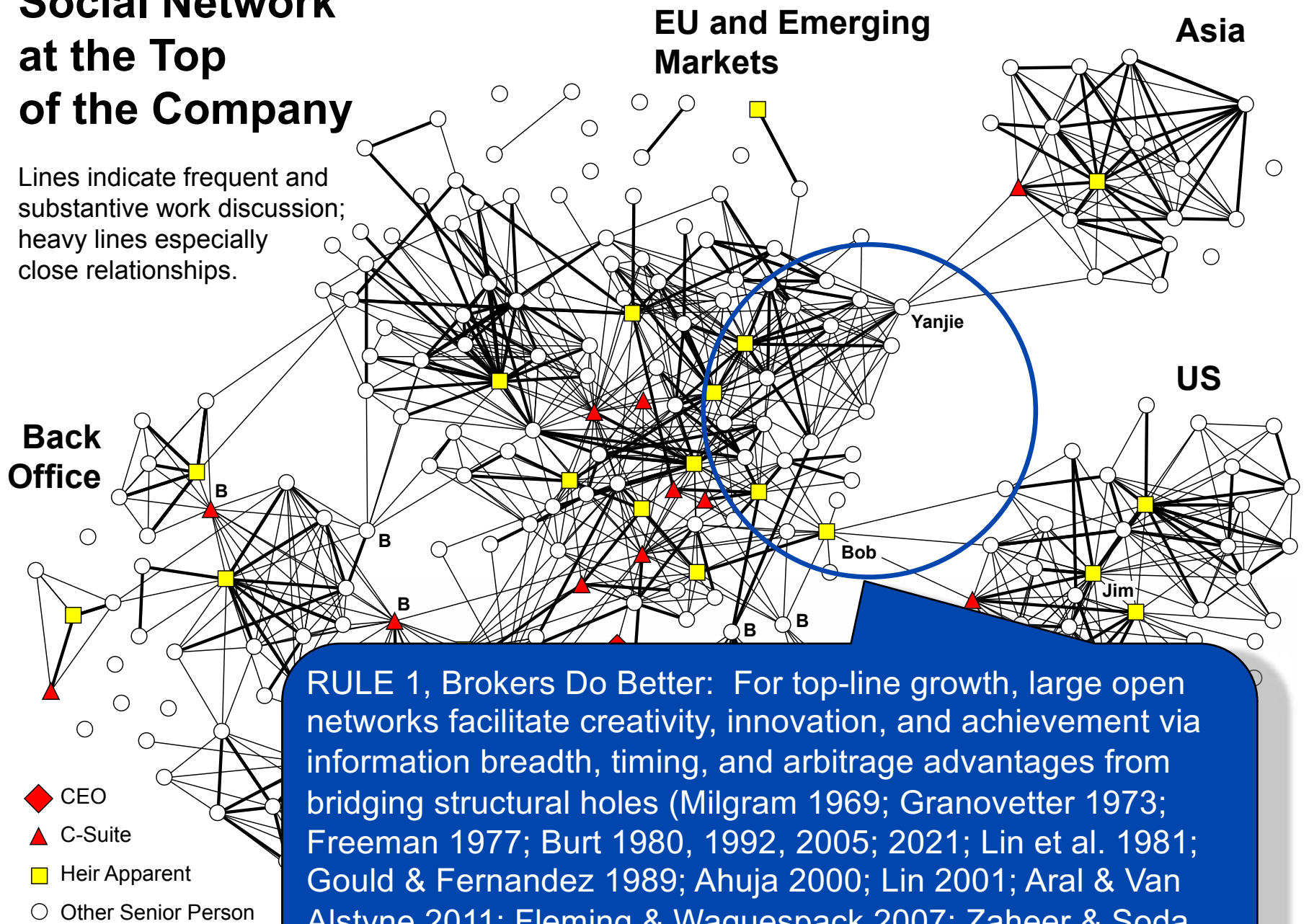
Strategic Leadership
Network Structure of Competitive Advantage (page 4)

- ◆ CEO
- ▲ C-Suite
- Heir Apparent
- Other Senior Person

Figure 2 in Burt, "Network disadvantaged entrepreneurs" (*Entrepreneurship Theory & Practice*, 2019)

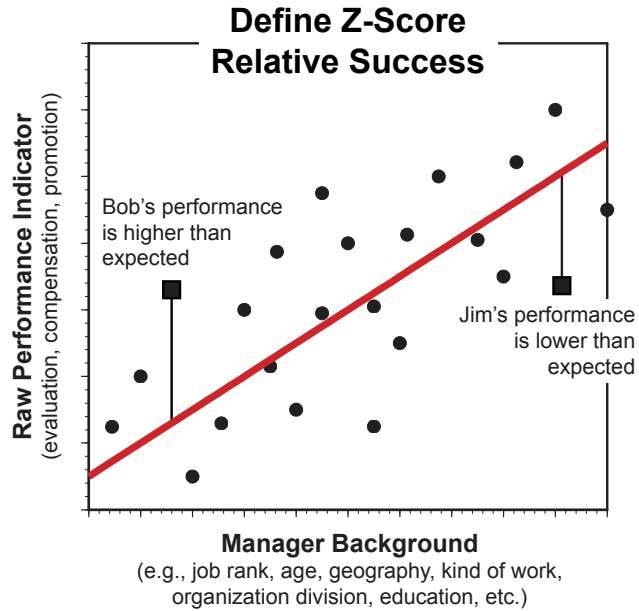
Social Network at the Top of the Company

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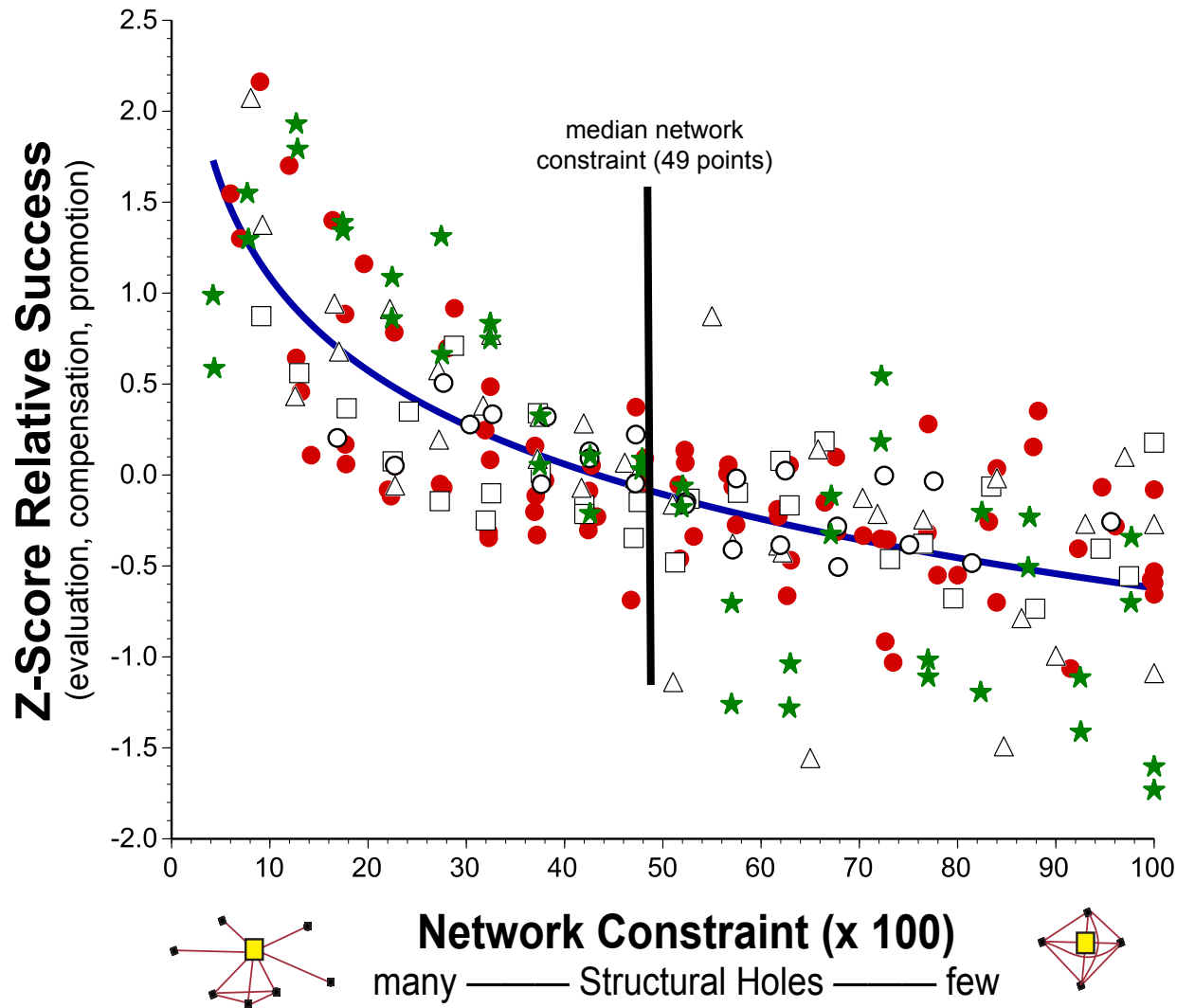


RULE 1, Brokers Do Better: For top-line growth, large open networks facilitate creativity, innovation, and achievement via information breadth, timing, and arbitrage advantages from bridging structural holes (Milgram 1969; Granovetter 1973; Freeman 1977; Burt 1980, 1992, 2005; 2021; Lin et al. 1981; Gould & Fernandez 1989; Ahuja 2000; Lin 2001; Aral & Van Alstyne 2011; Fleming & Waguespack 2007; Zaheer & Soda 2009; Goldberg et al. 2016; Soda, Tortoriello & Iorio 2018).

Success Decreases as the Network Around a Person Closes



- Managers in the U.S.
(n = 2085, 7 study pops, r = -.75)
- Managers in Europe
(n = 1094, 3 study pops, r = -.73)
- △ Managers in Asia Pacific
(n = 507, 2 study pops, r = -.77)
- Entrepreneurs in China
(n = 1084, 2 study pops, r = -.71)
- ★ EverQuest II Avatars (16109 people, 29555 characters, 2 samples, r = -.79)



NOTE — Plotted data are average scores within five-point intervals of network constraint within each study population (2018 survey added to Burt, *Social Networks* 2019: Figure 1; see footnote 2 there for data sources; cf. Figure 1.8 in *Brokerage and Closure*). Correlations are computed from the plotted data using log network constraint (-.75 for aggregate regression line displayed). Inset graph to the upper left contains hypothetical data illustrating computation of z-score relative success.

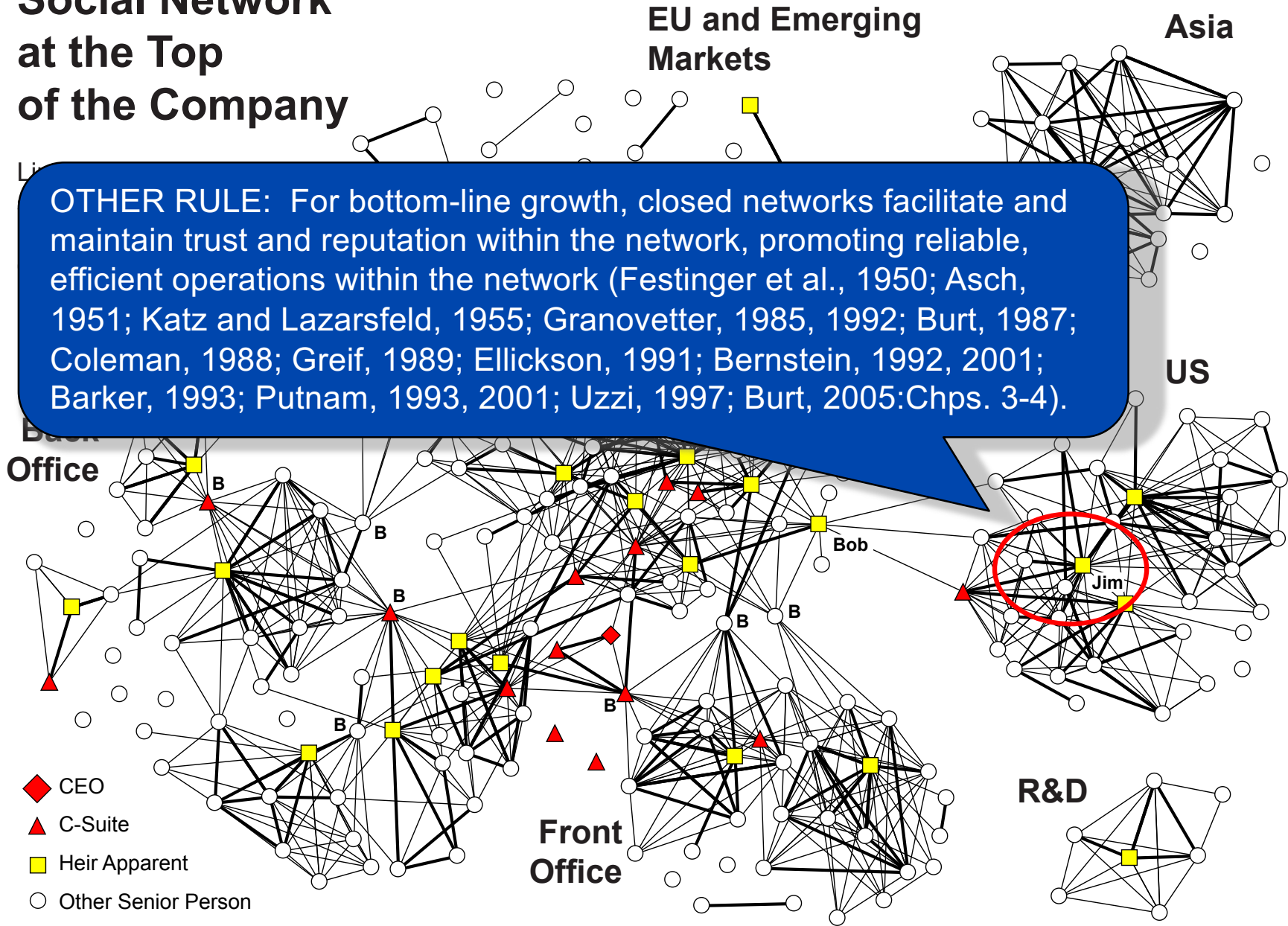
Trust and cooperation with people outside our own group is essential to the success association with network brokerage — and is the essence of civil society despite society's many polarized groups.*

Trust and cooperation are often not essential to acquiring information, but they are essential to being rewarded for distributing information.

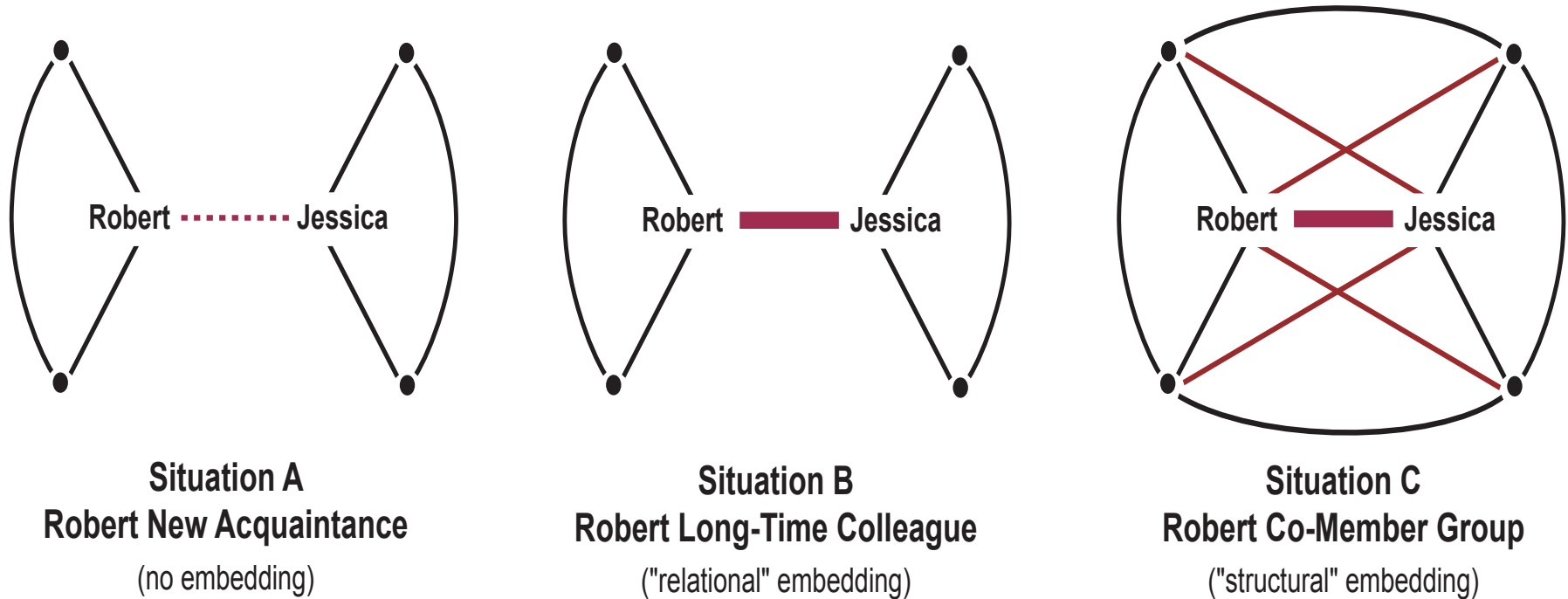
*Engagingly discussed by Baldassarri D., & Abascal A. 2020. Diversity and prosocial behavior. *Science* 369(6508): 1183–1187.

Social Network at the Top of the Company

OTHER RULE: For bottom-line growth, closed networks facilitate and maintain trust and reputation within the network, promoting reliable, efficient operations within the network (Festinger et al., 1950; Asch, 1951; Katz and Lazarsfeld, 1955; Granovetter, 1985, 1992; Burt, 1987; Coleman, 1988; Greif, 1989; Ellickson, 1991; Bernstein, 1992, 2001; Barker, 1993; Putnam, 1993, 2001; Uzzi, 1997; Burt, 2005:Chps. 3-4).



Closed Networks Facilitate Trust and Shared Beliefs by Creating and Maintaining Reputations



More connections allow more rapid communication, whereupon poor behavior can be more readily detected and punished. Bureaucratic authority is the traditional engine for coordination in organizations (budget, head count). The new engine is reputation (e.g., eBay market, Google organization). In flattened-down organizations, leader roles are often ambiguous, so people need help knowing who to trust, and the boss needs help supervising her direct reports. Multi-point evaluation systems, often discussed as 360° evaluation systems, gather evaluative data from the people who work with an employee. These are "reputational" systems in that evaluations are the same data that define an employee's reputation in the company. In essence, reputation is the governance mechanism in social networks.

Figure 3.1 in *Brokerage and Closure* (for discussion, see pages 105-111). Widower selling used car. Appendix II on network embedding in the theory of the firm - Commons (1924), Coase (1937), family through history.

CLOSURE — the lack of structural holes within a network

Third Parties Are an Early-Warning System that Protects Nice from Nasty in the Initial Games of a Relationship. Third parties enhance communication and enforcement, and so create reputation costs which facilitate trust.

For review discussion, see pages 127-130 in *Brokerage and Closure*, and for detailed discussion with respect to specific markets, see Lisa Bernstein on diamonds, cotton, and supplier relations (respectively 1992 *Journal of Legal Studies*, 2001 *Michigan Law Review*, and 2016 *Journal of Legal Analysis*), also Ellickson (1991) on Shasta County ranchers.

Closure creates social control by reputation: More communication channels allow more fulsome communication. Poor behavior is more readily detected and managed.

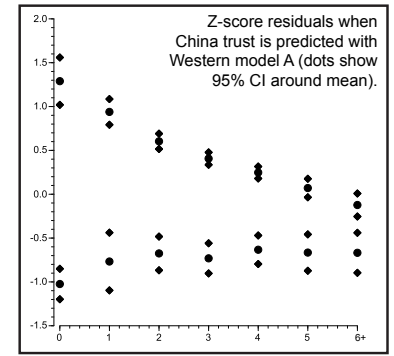
1985: Granovetter (1985 AJS) on the risk of trust reduced by third-party enforcement (discussed as structural embeddedness, 1992:44): "My mortification at cheating a friend of long standing may be substantial even when undiscovered. It may increase when the friend becomes aware of it. But it may become even more unbearable when our mutual friends uncover the deceit and tell one another." (also Tullock, 1985 QJE, pp. 1076, 1080-1081; balance theory in psychology, Heider 1958)

1988: Coleman (1988:S107-108 AJS, 1990 book) on the risk of trust reduced by third-party enforcement (discussed as network closure) with respect to rotating-credit associations: "The consequence of closure is, as in the case of the wholesale diamond market or in other similar communities, a set of effective sanctions that can monitor and guide behavior. Reputation cannot arise in an open structure, and collective sanctions that would ensure trustworthiness cannot be applied." E.g., Putnam's (1993 book) explanation of higher institutional performance in regional Italy attributed to the trust, norms, and dense networks that facilitate coordinated action.

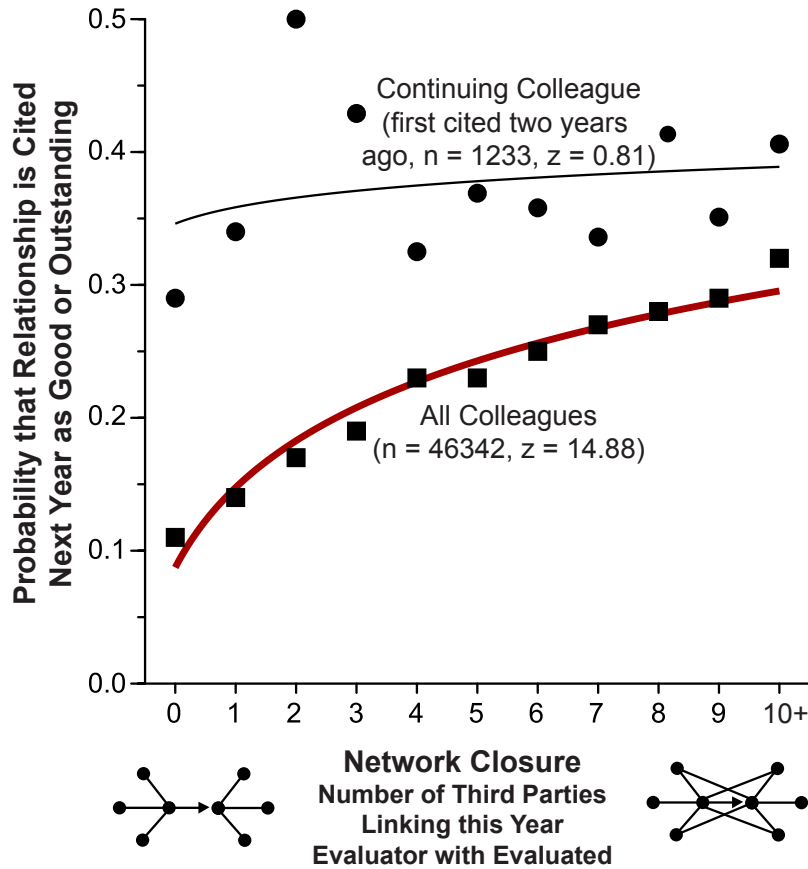
1989: Maghribi traders in North Africa during the 1000s, respond to strong incentives for opportunism in their trade between cities by maintaining a dense network of communication which encouraged them to protect their positive reputations and facilitated their coordination in ostracizing merchants with negative reputations (Greif, 1989 JEH; and for other applications, such as guilds, see Greif, 2006, *Institutions and the Path to the Modern Economy*).

Similar Patterns Internationally, Here, American and Chinese Business

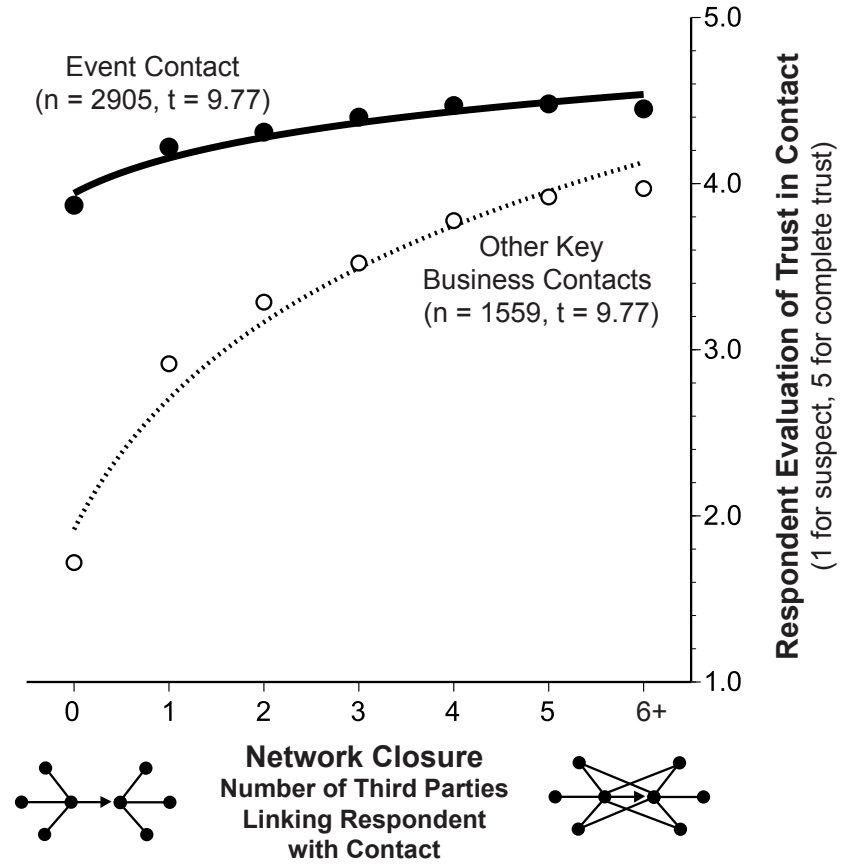
(closure facilitates relations maturing into self-sustaining *guanxi*)



Western Analysts and Bankers



Chinese Entrepreneurs



NOTE — Dots are average Y scores at each level of X. Graph A describes 46,231 observed colleague relations with analysts and bankers over a four-year period (adapted from Burt, 2010:174-175). Vertical axis is the proportion of relations cited next year as good or outstanding. Horizontal axis is number of mutual contacts this year. Graph B describes 4,464 relationships cited by the 700 Chinese entrepreneurs. Vertical axis is mean respondent trust in the contact, measured on a five-point scale. Horizontal axis is the number of other people in a respondent's network connected with the contact being evaluated for trust. Test statistics are estimated in both graphs with controls for differences in network size and adjusted for autocorrelation between relationships. Figure is adapted from Burt and Burzynska (2017: 234).

Figure 4 in Burt and Burzynska, "Chinese entrepreneurs, social networks, and *guanxi*," (2017, *Management and Organization Review*). See Appendix IV for different mixtures despite same network mechanism, and Burt and Oppen, "What is *guanxi*?" (2019).

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Two Hypotheses

(use what we know about relations inside to predict unobserved relations outside)

H1: People with a more closed social network are less likely to cooperate with a stranger.

The more closed the network around a person, the sharper the boundary between inside and outside, with reputation costs for bad behavior more enforced within the network, so cooperation outside is unfamiliar & fraught with perceived risks of dealing with an outsider.

H2: Especially more successful people.

People in closed networks tend not to be as successful as people in open networks, but there is substantial variation in success for reasons that have nothing to do with social networks. A person who has enjoyed success with whatever network he or she has, will believe that their network is the right one to have. My success is a result of my social behavior. Therefore expect people with a closed social network who have been successful to be reinforced in their distinction between inside and outside, and therefore particularly unlikely to cooperate with an outsider.

Social network is easy to measure with survey data (name generators and name interpreters) or archival data (email, joint activities, etc.). Trust and cooperation beyond the network cannot be measured with network data in the usual ways.

Incentivized game behavior offers a practical, productive alternative.

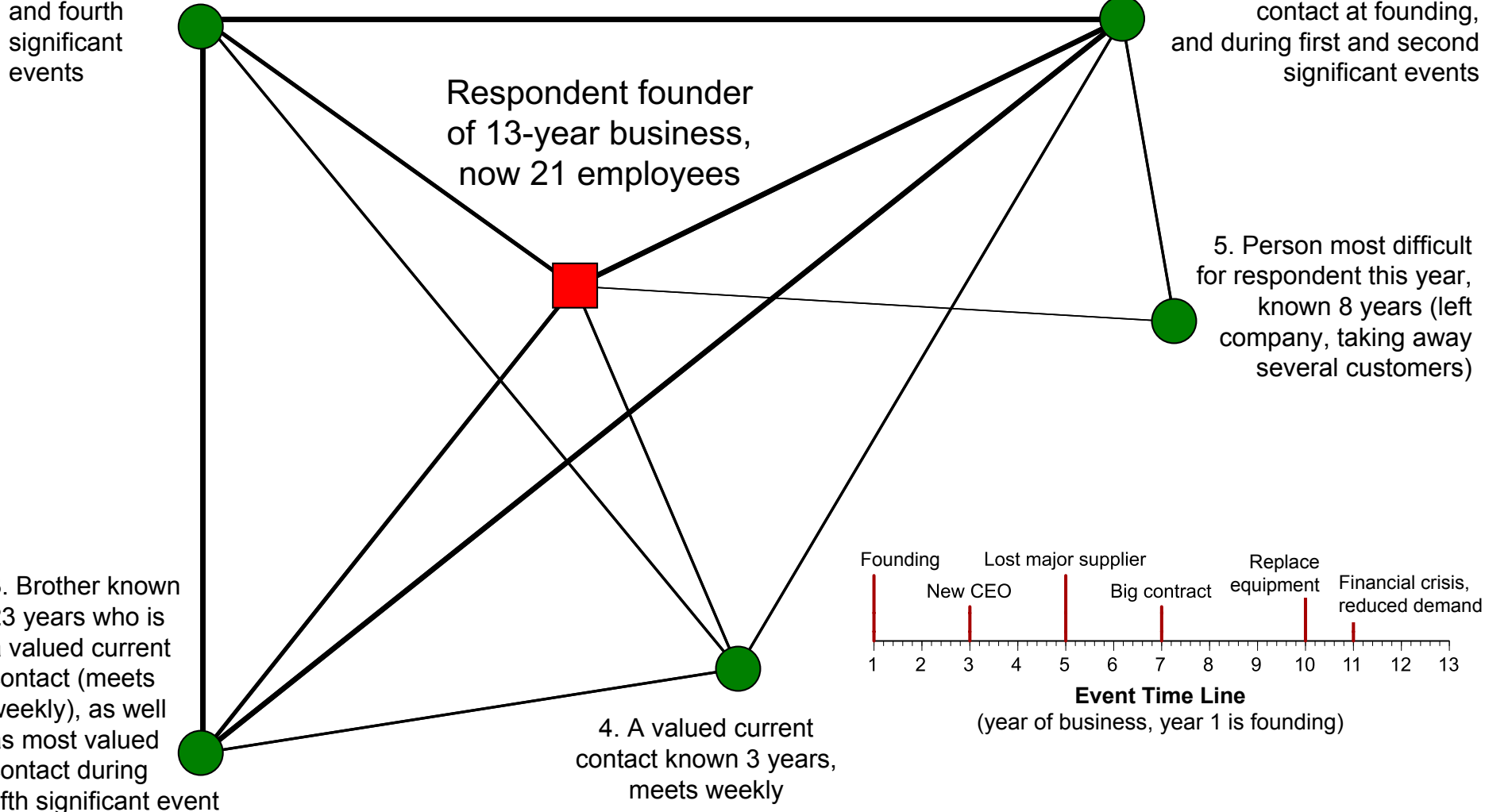
Figure 2. A Network More Closed than Average

Line thickness indicates closeness. No line is “distant” relation. Square is respondent.

(81.2 network constraint, 1.74 z-score; cf. relatively open network in Figure 3 in Appendix materials)

2. Brother known 18 years who is a valued current contact (meets weekly), as well as most valued employee, and most valued contact during third and fourth significant events

1. Uncle known 41 years who is a valued current contact (meets daily), as well as most valued contact at founding, and during first and second significant events



Now we ask you to play a game that could earn you a cash reward.

You are playing against an unknown Person X. Like you, the person is CEO of a Chinese firm and a citizen of China.

Person X has the same information you have, and this person has already made his/her choice, which is written in an envelope.

Your task is to choose between Option A and B not knowing what decision the other person made. You should decide based on what you believe Person X decided.

Here is the situation (Interviewer, hand over GAME SHEET):

If you choose option A and

- X has chosen A your payoff is 250 CNY
(and X's payoff is 250 CNY)
- X has chosen option B your payoff is 50 CNY
(and X's payoff is 400 CNY)

If you choose option B and

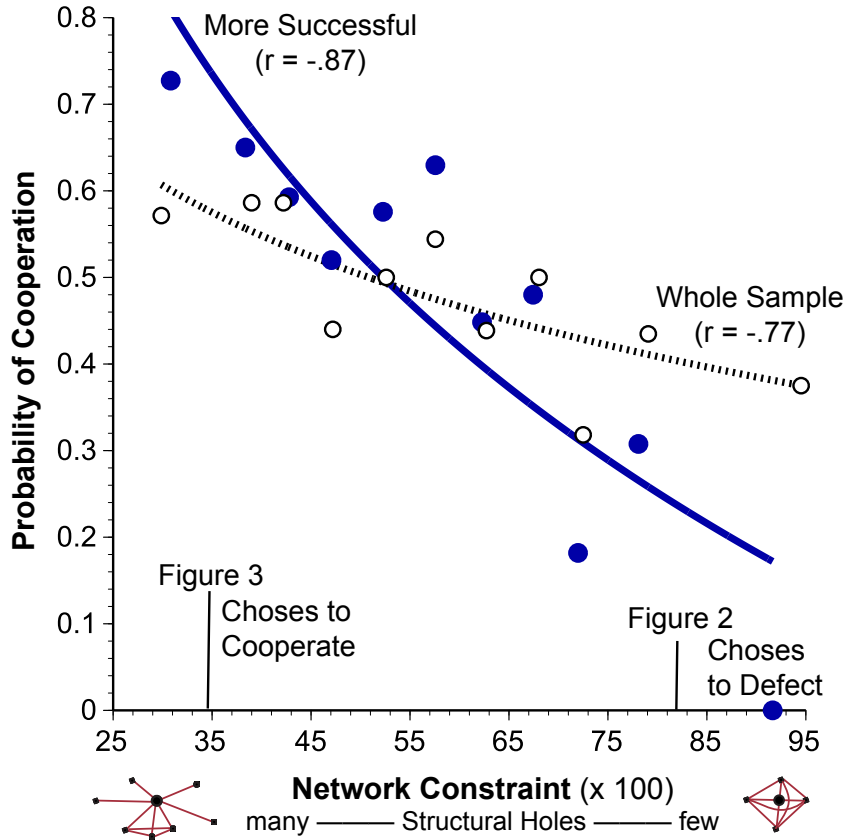
- X has chosen A your payoff is 400 CNY
(and X's payoff is 50 CNY)
- X has chosen option B your payoff is 100 CNY
(and X's payoff is 100 CNY)

Table 1.			
A Behavioral Measure of Cooperation			
		Move by Other Player	
Your Move:	A	B	
A	250, 250	50, 400	
B	400, 50	100, 100	

Interviewer records whether R selected A or B, then opens envelope containing Person X's move, and pays appropriate winnings.

Results

A. Cooperation and Social Network



NOTE – Plotted data are averages for 5-point intervals on X with thin tails of X truncated for infrequency. Displayed correlations are computed from the plotted data. “More Successful” are CEOs whose businesses had above-median profit last year. Adapted from Burt, Oppen & Holm, 2022: Figure 1). Figures 2 and 3 are illustrative networks included here in appendix material.

B. Cooperation and Network History

	Events Go Back	Coefficient for CEOs of Successful Businesses	
Only Current Contacts	0.0 years	-.71	(-0.99)
Plus Event-5 Contacts	1.6 years	-1.15	(-1.40)
Plus Event-4 Contacts	3.6 years	-1.57	(-2.01) *
Plus Event-3 Contacts	5.8 years	-2.14	(-2.79) **
Plus Event-2 Contacts	8.2 years	-1.79	(-2.74) **
Plus Event-1 Contacts	10.7 years	-1.90	(-3.00) **
Plus Founding Contacts (whole network)	11.8 years	-2.24	(-3.31) ***

NOTE – Each row contains logit coefficient and test statistic for the slope of the solid line in the graph. Networks in the top row include only current contacts. Networks in the bottom row include all current and all event contacts (which are the networks used for the graph). “Events Go Back” is the average number of years ago that the oldest included event occurred. All controls in the analysis are held constant here. Adapted from Burt et al. (2022:Table 6).

* $P \leq .05$ ** $P \leq .01$ *** $P \leq .001$

Robustness Results

- 4.1 Network History (current versus older network; previous page)
- 4.2 Respondent Recall (founders versus others)
- 4.3 Interview Duration (too quick or too long?)
- 4.4 Predisposition to Cooperate (already does training)
- 4.5 Respondent Belief about Other CEOs (legitimacy)
- 4.6 Characteristic Relationship (positive relations with colleagues increases odds of cooperation?)
- 4.7 Institutional Environment (safer to cooperate after 2004 constitutional amendment?)

Key Points:

Trust and cooperation with people outside our own group is essential to the success association with network brokerage — and is the essence of civil society despite society's many polarized groups. However, current research strategies focus on relations within our personal networks (where we have good data on relationships).

Burt, Opper & Holm use an incentivized game to measure respondent behavior. Social behavior learned within a respondent's network affects respondent behavior beyond the network. As expected, respondents in closed networks are less likely to cooperate with outsiders (H1), and respondents who have found success with their closed network are especially likely to defect against outsiders (H2).

The results are a proof of concept for better integrated research on the social origins of trust and cooperation. Social network theory benefits from well-tested game measures of interpersonal behavior. Behavioral economics benefits from well-tested network measures of the social learning that subjects bring into the game.

Immediate Research Questions:

Do the Chinese results replicate in other cultures?

How does the effect of network closure mix with other familiar effects?

Personality (self-monitoring vs. network closure)

Homophily & social foci (closure strengthens homophily effects?)

Network duration and exogenous shock (closure effect increases with duration?)

“Beyond the network” can begin at different path distances for different people
(stranger is conservative extreme; where does positive effect of closure
switch to negative; closure shortens horizon for beyond the network?)

How do trust and cooperation measurements compare using trust opinion, behavior in the Prisoner’s Dilemma Game, and behavior in the Trust Game?

New perspective on old research questions: What do social norms of proper behavior add to the behavioral style learned in a closed network? An example is the long-standing idea that Banfield’s (1958) “amoral familism” inhibits trust and cooperation beyond one’s family.

The Prisoner’s Dilemma item can be used in large, probability surveys — where the General Social Survey general trust question is often used (GSS below, and cf. European Values Survey, World Values Survey, British Household Panel Survey, American National Election Studies) — but incentivized games provide trust or cooperation data with attractively behavioral meaning.

179. A. Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?

[VAR: TRUST]

<u>RESPONSE</u>	<u>PUNCH</u>	<u>YEAR</u>														
		<u>1972-82</u>	<u>1982B</u>	<u>1983-87</u>	<u>1987B</u>	<u>1988-91</u>	<u>1993-98</u>	<u>2000-04</u>	<u>2006</u>	<u>2008</u>	<u>2010</u>	<u>2012</u>	<u>2014</u>	<u>2016</u>	<u>2018</u>	<u>ALL</u>
Most people can be trusted	1	3937	0	2188	56	1539	2591	1286	814	450	458	431	519	623	492	15384
Can't be too careful	2	4780	0	2829	285	2221	4351	2128	1521	859	839	847	1076	1244	995	23975
Other, depends (Vol.)	3	341	0	169	8	171	366	250	174	56	75	53	88	79	69	1899
Don't know	8	36	0	12	0	10	24	12	0	0	3	7	3	5	6	118
No answer	9	12	0	15	4	7	19	8	1	0	2	0	1	5	1	75
Not applicable	0	4520	354	2329	0	1959	2983	4710	2000	658	667	636	851	911	785	23363

Stated opinions about trust can have correlates very different from correlates of trusting behavior. For example, Bellemare and Kroger (2007:195-196, *Eur Econ J*), on the “quite remarkable” differences between correlates of the World Value Survey trust item versus correlates of behavior in a Trust Game. “In sum, evidence is mixed, and the relation between the two measures of trust is unclear at this point” (Alos-Ferrer & Farolfi, 2019 on GSS and Trust Game).



Trust Games and Beyond

Carlos Alós-Ferrer^{*†} and Federica Farolfi[†]

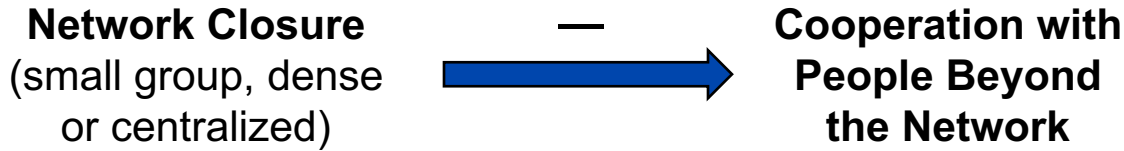
Department of Economics, Zurich Center for Neuroeconomics, University of Zurich, Zurich, Switzerland

The Prisoner's Dilemma item is easier than the basic Trust Game to incorporate into a large, probability survey, but we don't know how respondent behavior in the former is related to respondent behavior in the latter.

Trust is fundamental for the stability of human society. A large part of the experimental literature relies on the Trust Game as the workhorse to measure individual differences in trust and trustworthiness. In this review we highlight the difficulties and limitations of this popular paradigm, as well as the relations to alternative instruments ranging from survey measures to neurochemical manipulations and neuroimaging.

E.g., in Ermisch & Gambetta (2011, *JEBO*): A survey respondent (ego) receives £10, and is then given the option of increasing the £10 to £22 by giving the £10 to another respondent in the survey (alter) with whom ego has been randomly matched. Ego is told that alter will be given £40 with an explanation of ego's decision, whereupon alter will be asked whether he wants to keep all £40, or split the money with ego, returning £22 to ego, and keeping £18 for himself. Neither ego nor alter receive any information about the other, except their joint participation in the survey. If ego keeps the £10, the game ends and ego is coded as not trusting alter. If ego sends the £10, the game plays out, and ego is coded as trusting alter.

Closure-Cooperation Hypothesis:



Evidence for these two hypotheses is reviewed and contrasted in "Note on family versus network closure as foundation for distrust and lack of cooperation" posted on my research website.

Family-Trust Hypothesis:



Banfield (1958): participant observation, "amoral familism" (also used in Gans, 1962 and Putnam, 1993)

Alesina and Giuliano (2011, *J Eur Econ Assoc*): WVS trust opinion & family opinion (family is very important ... not at all important; plus some additional opinion items; n > 100,000 across multiple countries)

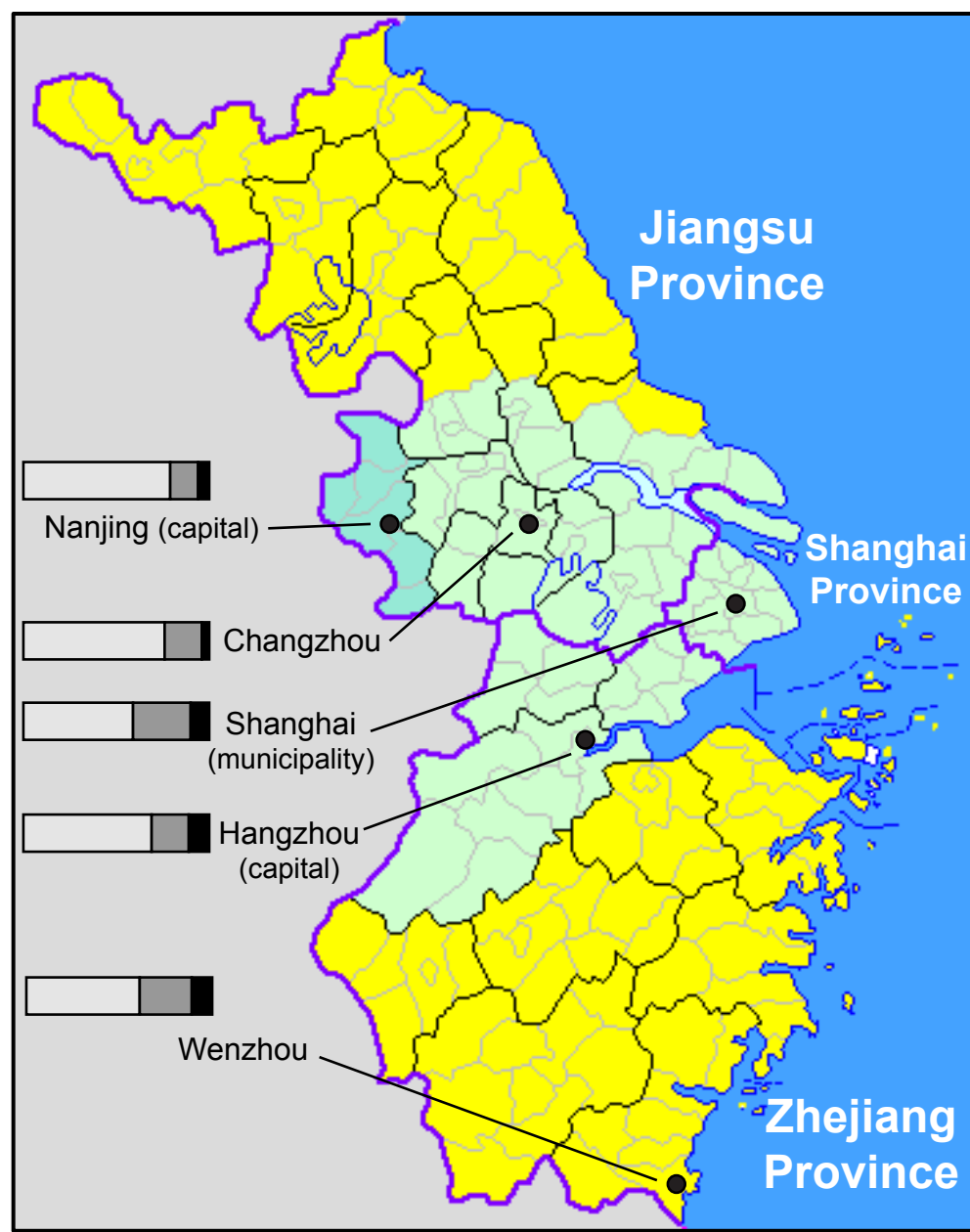
Ermisch & Gambetta (2010, *J Econ Behav & Org*): Trust Game behavior & family behavior (binary predictor = 1 if respondent sees weekly or more a family member in a different household; n = 170 subsample within British Household Panel Survey)

Appendix Materials

Stratified Random Sample of 500 Chinese Entrepreneurs from Five Cities in Three Provinces of China's Yangtze River Delta Region.

(20% 2013 China GDP,
32% 2013 China imports/exports)

Sample Characteristics	N	%
Small (10 - 100)	344	69%
Medium (101 - 300)	114	23%
Large (> 300)	42	9%
Textile	111	22%
Transportation Equipment	130	26%
Machinery	126	25%
Pharmaceutical	56	11%
Electronics	77	16%
Respondent is Founder	388	78%
Year Born	1967 median, 8.2 sd, 1943-1988	
Yr. Founded	2001 median, 4.6 sd, 1983-2011	



The map is taken from the Wikipedia entry for “Yangtze River Delta” with the delta proper indicated in green. Bold lines separate provinces. Bars indicate small, medium, and large firms in the sample 100 entrepreneurs from each city (respectively, light, dark grey, and black areas of city bar).

Table 2. Data on Respondent's Social Network

Name Generator Items

(Founding) Who was the one person who was most valuable to you in founding the firm? (500 contacts cited)

(Three to Five Other Events) Now please do the same thing for each of the significant events you listed. The first significant event you listed was (say first event) in (say year). Who was the person most valuable to you during that event? 1,955 contacts cited)

(Core Current) Shifting now to business this year, and thinking about people inside or outside your firm, who are the three or four people who have been most valuable to your business activities this year? (1,689 contacts cited)

(Difficult) In contrast to people who help and are valued in your business activities, there are usually some people who make life difficult. Without mentioning the person's name, who was the most difficult person to deal with in your business activities this year? Just jot a name or initials in the box below. Only you are going to know who this person is. (500 contacts cited)

(Employee) Shifting to happier thoughts, who do you think was your most valuable senior employee this year? (500 contacts cited)

(N.E.C.) Now that you have a list of contacts on the roster worksheet, please look it over quickly. **Is there anyone particularly significant for your business who has not been mentioned?** If yes, please enter their name at the bottom of the list. There are many people you could mention. These would just be people particularly significant for your business. (16 contacts cited)

Name Interpreter Items

Contact **Gender** (male, female)

Emotional Closeness to Contact (especially close, close, less close, distant)

Duration of Connection with Contact (years known)

Frequency of Contact (daily, weekly, monthly, less often)

Trust in Contact (1 to 5, low to high trust) "Think about your trust level towards him/her. Please circle the closest option (1 least trust; 5 highest trust)." In Chinese: 想一想您对他/她的信任程度; 请在表意最接近的选项上画圈 (1最不信任-5最信任)

Contact **Role** (circle all that apply: family, extended family, neighbor, party, childhood, classmate, colleague, military, business association)

Matrix of **Connections between Contacts** (especially close, distant, or something in between)

Network Size: Number of people cited

Network Density: Mean connection between people cited (mean z_{ij} , varies from 0 to 1 with connection strength).

Network Constraint, C, measures closure around ego i:

$$C = \sum_j c_{ij} = S_j (p_{ij} + \sum_q p_{iq} p_{qj})^2, q \neq i, j \text{ (} p_{ij} \text{ is proportional } z_{ij}\text{)}$$

NOTE — Name generators, listed in order asked in interview, identify respondent contacts (number of cited contacts in parentheses). In total, 3,164 different contacts are cited. Name interpreters flesh out relationships with each cited contact, and define connections among the contacts. The name generators are asked first in the interview, followed by the name interpreters.

Figure A2. Business Event Name Generator

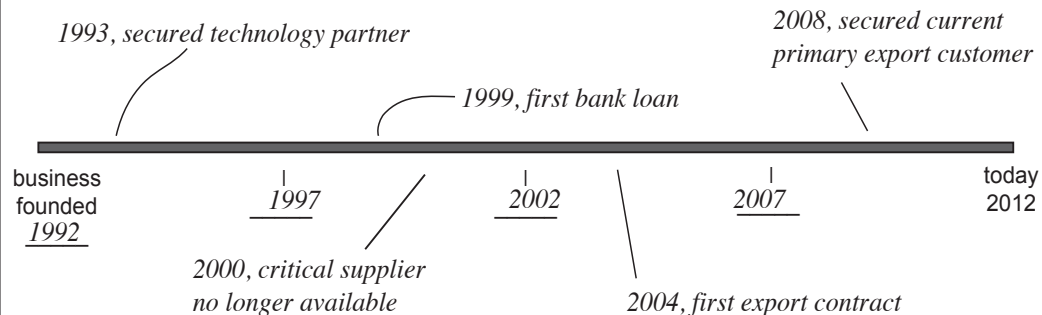
The next five questions generate a summary picture of the business network. To draw the picture, you will be asked about people, but we do not want to know any one's name. I will go through this network worksheet with you, asking about people who were useful to your business in one way or another. Without mentioning anyone's name to me, please write on your worksheet the names of people who come to mind in response to the questions. We will create a list of names then refer to people by their order on the list. No names. You will keep the worksheet to yourself.

Q1. Let me begin with an example so you can see how the interview protects your confidentiality at the same time that a picture of the business network emerges. Your business time line shows that your firm was founded in 1992. **Please think back to your activities in founding the firm. Who was the one person who was most valuable to you in founding the firm?**

Q2. Now please do the same thing for each of the significant events you listed on your business time line. The first significant event you listed was 1997 in 1992. **Who was the person most valuable to you during that event?** Please write on the first line below the person's name. The person most valuable in this event could be the same person who was most valuable to you in founding the firm. You would just enter the name again.

Business Time Line Worksheet

Time Line for an Example Firm

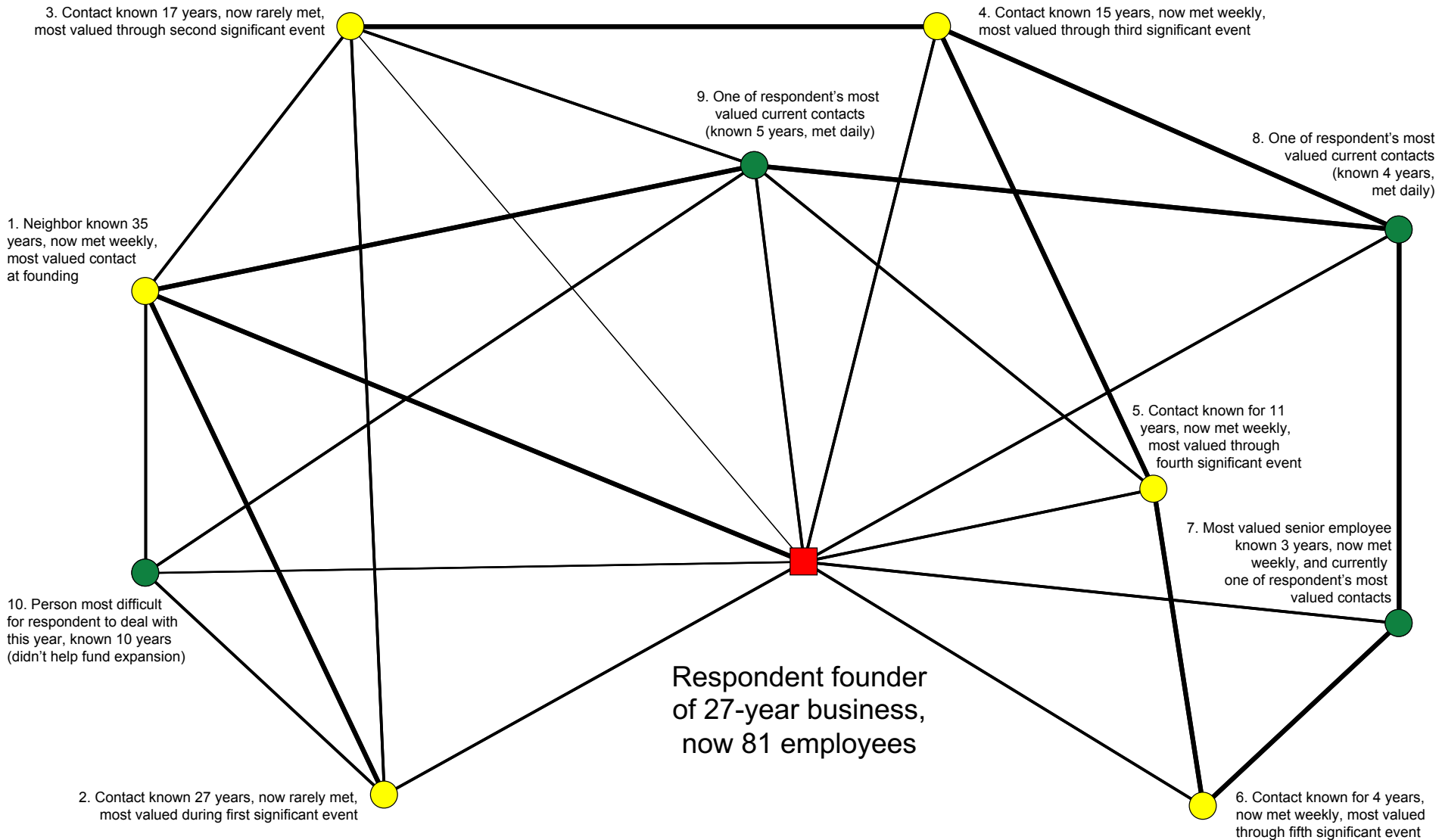


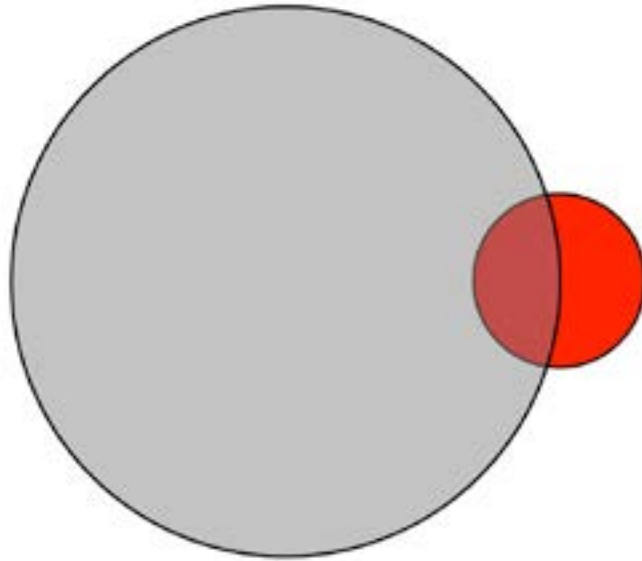
Time Line for Your Firm



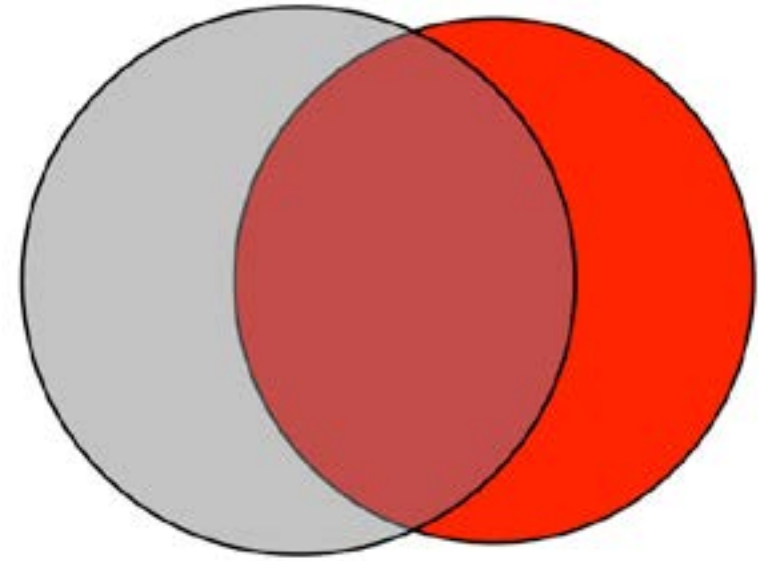
Figure 3. A Network More Open than Average

Line thickness indicates closeness. No line is “distant” relation. Square is respondent.
Gold dots are people not cited as currently most valued contacts.
(34.7 network constraint, -1.56 z-score)





Western Analysts and Bankers
1,233 Ties Are *Guanxi*, of
13,148 at Risk of Being *Guanxi* (9%)



Chinese Entrepreneurs
2,905 Ties Are *Guanxi*, of
4,464 at Risk of Being *Guanxi* (65%)

Same Network Mechanism, with Different Mixtures, Can Define Different Business Environments

NOTE: Grey area is current contacts (contacts cited this year by analyst or banker, contacts cited as current or met daily by Chinese entrepreneur). Red area is proportional to number of *guanxi* ties (known for more than two years for analyst or banker, most valued help in significant event for Chinese entrepreneur). Overlap indicates *guanxi* ties in current network.

QUESTIONS: *Guanxi* ties are more prevalent in China and critical to network advantage in China (there is no evidence of network advantage associated with success absent *guanxi* ties not cited as current contacts).

- Is the China difference a substantive difference between China and the West, or a methodological artifact? (54% of *guanxi* ties are cited as routine business contacts on non-event name generators.) What implications? As Schelling (1975:19) so nicely states the issue in *Micro Motives and Macro Behavior*: "How well each does for himself in adapting to his social environment is not the same thing as how satisfactory a social environment they collectively create for themselves."
- How prevalent are *guanxi* ties in the West (now we know what to look for), how often are they active as current contacts, and to what extent does success in the West depend on them?

Trust is a Function of the Network, Not the Roles

This is Table 1 in Burt, Bian, and Opper (2018, *Social Networks*), "More or less *guanxi*: trust is 60% network context, 10% individual difference."

	Prediction with Just Contact Roles	Contact Roles and Network Structure	Prediction with Just Network Structure
Closure, Structural Embedding (log number of third parties, 0-6; 3.05 mean)	—	.770 (21.21)***	.760 (21.04)***
Event Contact (0-1; .65 mean)	—	1.447 (20.87)***	1.419 (20.50)***
Interaction (event x number of third parties)	—	-.508 (-10.72)***	-.496 (-10.49)***
Rarely-Met Contacts (days between meetings, 1 – 90; 13.42)	—	-.014 (-27.11)***	-.014 (-27.72)***
Years Known (log 1-60; 10.53 mean)	—	.269 (12.00)***	.334 (16.76)***
Childhood Friend (0-1, .01 mean)	.328 (1.80)	.217 (1.88)	—
Classmate in School (0-1, .04 mean)	.302 (1.86)	.215 (2.10)*	—
Co-Member in Business Association (0-1, .03 mean)	-1.757 (-9.16)***	-.073 (-0.59)	—
Family (0-1, .08 mean)	.444 (2.62)**	.220 (2.05)*	—
Military (0-1, .004 mean)	.369 (1.22)	-.158 (-0.83)	—
Neighbor (0-1, .02 mean)	-.006 (-0.04)	.210 (1.89)	—
Party (0-1, .01 mean)	-.051 (-0.23)	.051 (0.36)	—
None of the Above (0-1, .82 mean)	-.703 (-4.19)***	-.002 (-0.02)	—
Constant	4.495	2.038	1.959
R ²	.249	.700	.696

Trust Is Associated with Relational and Structural Embedding

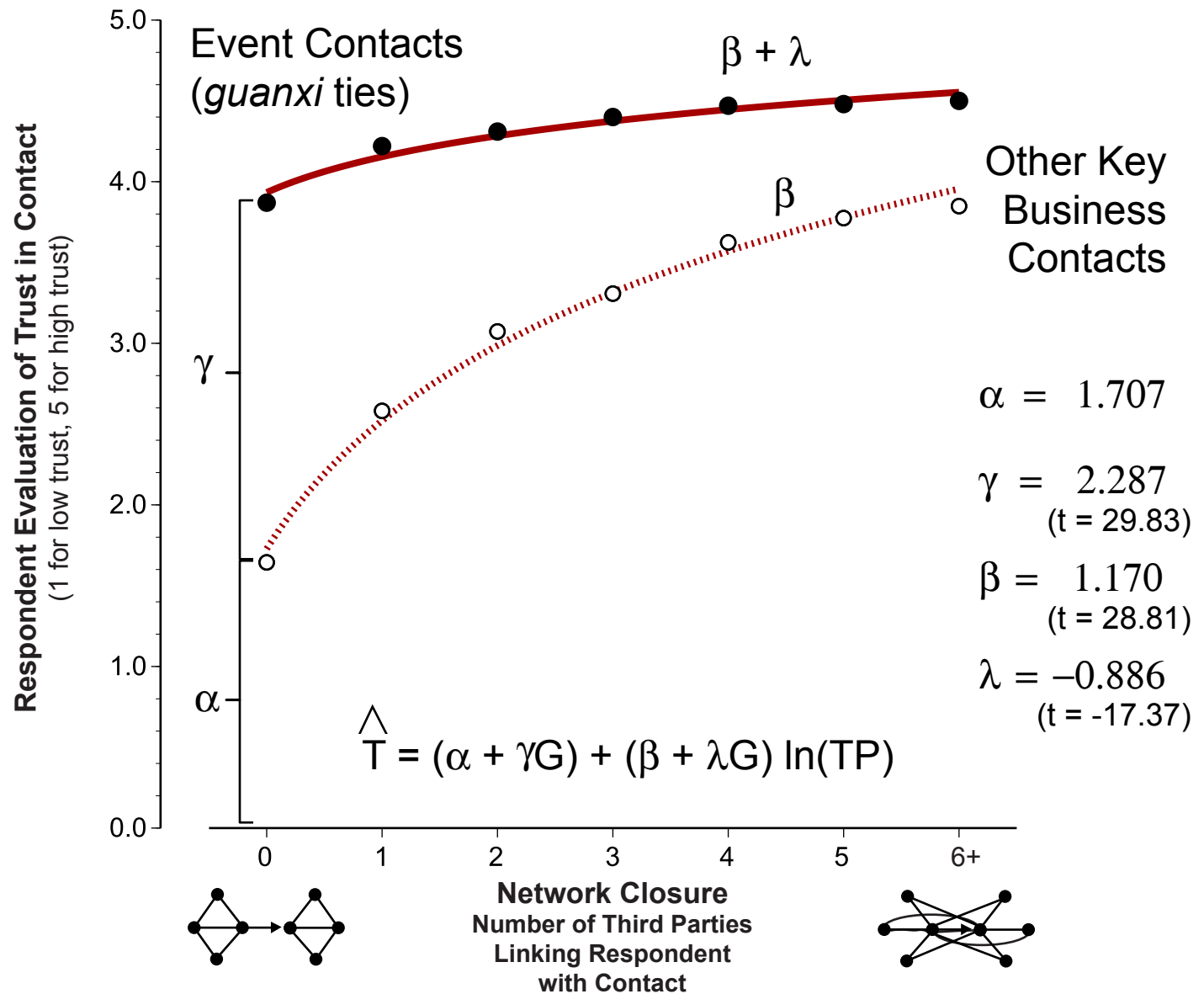
Alpha — average trust in a nonevent bridge relationship

Gamma — increase to alpha if bridge is *guanxi*

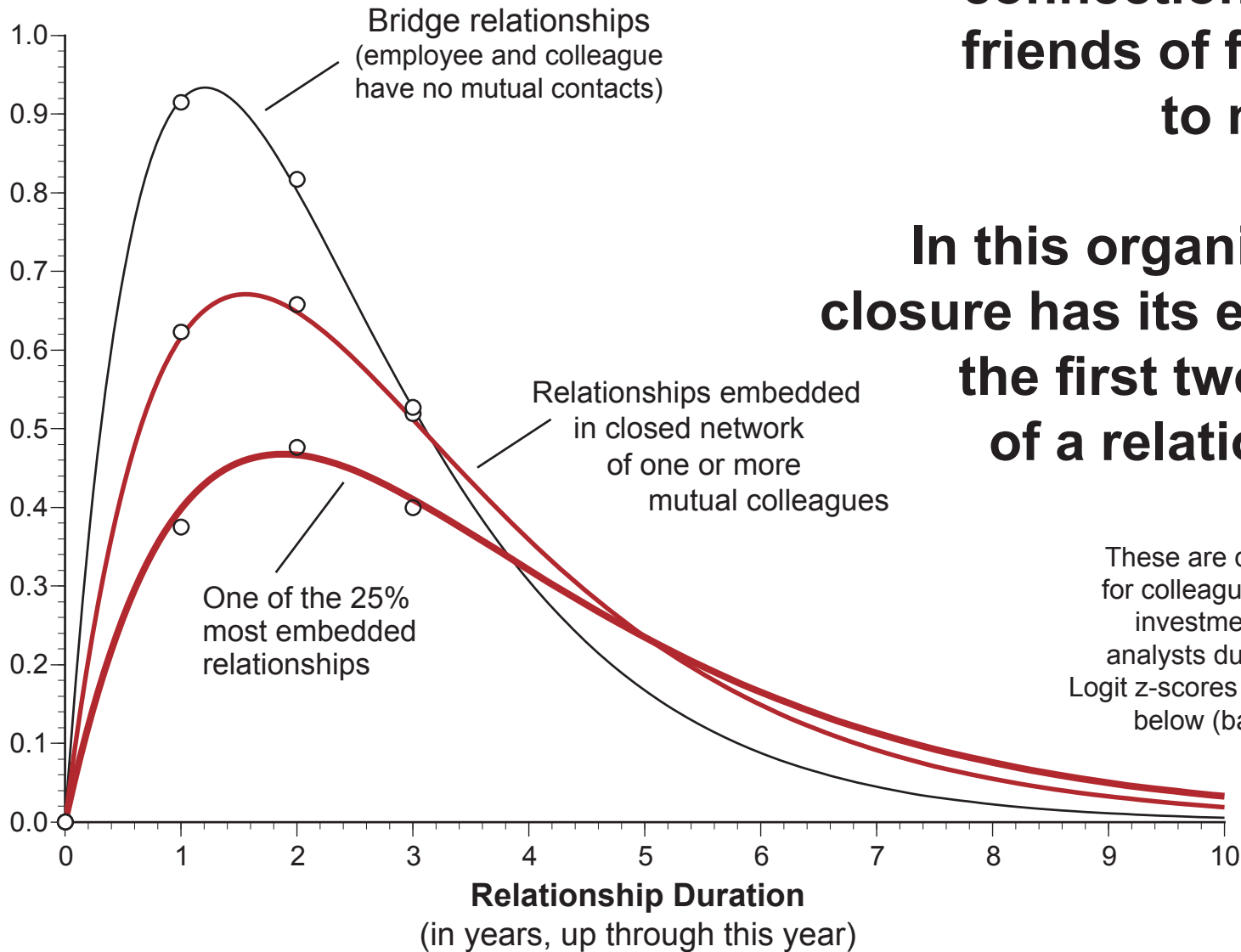
Beta — average increase in trust associated with the log of mutual contacts embedding a nonevent relationship

Lambda — adjustment to beta when relationship is *guanxi*

NOTE — Dots are average scores on vertical axis at each level of horizontal. Vertical axis is mean respondent trust in a contact, measured on a five-point scale (T). Horizontal axis is closure measured by number of mutual contacts in respondent network (count of third parties, TP). G is a dummy variable equal to 1 for a *guanxi* tie, here operationalized by citation as most valued contact in a significant event. Parameters are estimated by OLS for 700 respondents and 4,464 relations, with correction for correlation between relations described by same respondent ("cluster" option).



Probability that Relationship Decays before Next Year
(relation cited this year is not cited next year)



Closure Slows Decay, which allows new connections (with friends of friends) to mature.

In this organization, closure has its effect in the first two years of a relationship.

These are decay functions for colleague relations with investment bankers and analysts during the 1990s. Logit z-scores in parentheses below (based on 46,231 relations).

from Figure 4.8 in *Brokerage and Closure*. For general discussion of structural embedding primarily facilitating the formation of relations rather than their long-term survival, see Dahlander & McFarland (2013 ASQ), "Ties that last: tie formation and persistence in research collaborations over time."

Table 3. Predicting Cooperation

NOTE – Coefficients are from logit regression models predicting which of the 500 CEOs made the cooperative move in a one-shot Prisoner’s Dilemma game (PDG). The intercept for model A is 5.21, with a .09 pseudo-R², and respectively 10.49 and .10 for model B. Parentheses contain robust standard errors. “Constraint with Low Success” is the low-success dummy variable times log constraint measured as a deviation from average (Log C – mean log C) so the direct effect of low success is measured for an average network. Network constraint and the low-success dummy are discussed in the text. Abstract PDG is 1 if respondent was presented with the abstract version of the game. Education is five levels (less than high school, high school, some college, college, more than college). Years of education yields the same negligible coefficient. Income is 12 categories of annual income to respondent from the business (skewed bell curve distribution, same negligible coefficient with log income). Reference category for city differences is Hangzhou. R&D department is 1 if respondent said the company had a R&D department. Reference category for industry is textiles.

* P ≤ .05 ** P ≤ .01 *** P ≤ .001

	Model A		Model B	
Log Network Constraint	-1.08	(0.46) *	-2.24	(0.67) ***
Low Success	—		-.25	(0.27)
Constraint with Low Success	—		2.65	(0.92) **
Respondent & Business Controls				
Education	.09	(0.10)	.05	(0.10)
Income	.02	(0.05)	.01	(0.06)
Age (decades)	-.05	(0.15)	-.05	(0.16)
Female	-.01	(0.26)	.01	(0.27)
Number of Siblings	.06	(0.10)	.05	(0.11)
Percent Family in Network	.02	(0.01)	.02	(0.01)
Percent Family x Siblings	.01	(0.004) *	.01	(0.005) *
Founder	-.36	(0.26)	-.37	(0.27)
R&D Department	.21	(0.21)	.16	(0.21)
Company Size (log assets)	-.10	(0.09)	-.15	(0.12)
Company Age (years)	-.05	(0.02)	-.05	(0.02)
Design Controls				
Task Order, First	-.17	(0.24)	-.20	(0.24)
Task Order, Second	.36	(0.24)	.36	(0.24)
Abstract PD	-.36	(0.19)	-.31	(0.20)
City, Nanjing	.50	(0.32)	.45	(0.33)
City, Changzhou	-.56	(0.32)	-.59	(0.32)
City, Shanghai	.85	(0.35) *	.85	(0.36) *
City, Wenzhou	.51	(0.33)	.46	(0.33)
Industry, Pharmaceuticals	.61	(0.36)	.63	(0.37)
Industry, Machinery	-.33	(0.29)	-.29	(0.29)
Industry, Transportation Equip.	.34	(0.29)	.36	(0.30)
Industry, Electronics	.13	(0.32)	.18	(0.33)