How Social Networks Create Competitive Advantage

Hubs, Brokers, and Structural Holes

These slides are from a Chicago Booth course, “Strategic Leadership,” research papers, and books recent, Neighbor Networks (2010), and forthcoming, Structural Holes in Virtual Worlds (2015). All rights are reserved (© Ronald S. Burt 2014). The course syllabus, course slides, book overviews, and related research papers can be downloaded from http://chicagobooth.edu/fac/ronald.burt, (download draft chapter, “Network Structure of Advantage,” for summary overview).
Sociogram of Senior Leadership in the Healthcare Organization

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

Figure 1.2 in Burt (2015, Structural Holes in Virtual Worlds).
The employee AFTER is more positioned at the crossroads of communication between social clusters within the firm and its market, and so is better positioned to craft projects and policy that add value across clusters.

Here is the core network for a job BEFORE and AFTER the employee expanded the social capital of the job by reallocating network time and energy to more diverse contacts.

It is the weak contact connections (structural holes) in the AFTER network that provides the expanded social capital.

Research shows that employees in networks like the AFTER network, spanning structural holes, are the key to integrating operations across functional and business boundaries. In research comparing senior people with networks like these BEFORE and AFTER networks, it is the AFTER networks that are associated with more creativity, faster learning, more positive individual and team evaluations, faster promotions, and higher earnings.

*Network scores refer to direct contacts.

From Figure 1.4 in Burt (1992, Structural Holes) and Figure 1.2 in Brokerage and Closure. See Appendix I on survey network data, Appendix II on measuring network constraint.
Graph A shows idea quality increasing with more access to structural holes. Circles are average scores on the vertical axis for a five-point interval of network constraint among supply-chain managers in a large electronics firm (Burt, 2004:382, 2005:92). Bold line is the vertical axis predicted by the natural logarithm of network constraint. Graph B shows performance increasing with more access to structural holes. Circles are average scores on the vertical axis for a five-point interval of network constraint within each of six populations (analysts, bankers, and managers in Asia, Europe, and North America; Burt, 2010:26, cf. Burt, 2005:56).

**Figure 2.3**

Brokerage for Detecting and Developing Opportunities
The Returns to Brokerage Aggregate to Companies, Industries, and Communities

People with phone networks that span structural holes live in communities higher in socio-economic rank

Networks are defined by land-line & mobile phone calls (map to left). Socio-economic rank is UK government index of multiple deprivation (IMD) based on local income, employment, education, health, crime, housing, and environmental quality (graph below). Units are phone area codes.

figures from Eagle, Macy, and Claxton (2010, Science), “Network diversity and economic development”
Bold lines indicate relations in which three of four connections are strong, one of which is supervision (other three are frequent email, 360 evaluations, and close contacts cited in the network survey).

Light lines indicate relations in which at least one of the three non-authority connections are strong.

These are the 509 senior people in the senior population. Symbol shape indicates job rank (triangle for level 1 [white are C-suite], circle for level 2, square for level 3 or lower).

Largest symbols indicate hierarchies apparent in current program cohort (random ID numbers), slightly smaller symbols indicate people in the previous cohort.
Network Map of Senior Leadership in a Large Financial Organization

Gold is C-Suite. Red is program participant. Bold lines are strong connections. Light lines are weak connections. Numbers are random identification codes.

Organization: △ BU1, □ IT, ○ BU2, □ HR, ◇ BU3, □ Other
These are the senior leaders in a large bank.

Lines indicate people who have frequent and substantial face-to-face contact. Average such connection is embedded in 28 mutual friends (0 minimum, 63 maximum).

What are the implications of such a dense network for bank operations? Customer service? Employee engagement? Bank adaptation to the changing business environment?
Figure 15.

Sociogram of Directors in Chicago Index Companies

1,380 Chicago directors.

Gold indicates Commercial Club member, concentrated in center (13.2 t-test).

818 isolates sit on one Chicago board or one Chicago board plus outside boards containing no other Chicago elites.
Audience Effect II: Broker's Social Standing Reassures or Concerns the Target Audience

Network status is on the vertical axis of the top graph. It is computed like price in the general equilibrium model: $S_i = \sum_j z_{ji} S_j$, where $S_i$ is status of person $i$, and $z_{ji}$ is connection from $j$ to $i$ (see Appendix V for details). Like price, status is only meaningful in reference to the status of some numeraire benchmark person. Here, status is normalized at the mean, so a score of 1.0 indicates a person of average status in the network.

Sociogram is Figure 3.2 in Neighbor Networks and the graphs are from Figures 1 and 2 in Burt & Merluzzi discussion of the link between brokerage and network status as a reputation measures (2013, "Embedded brokerage," Research in the Sociology of Organizations)
Less Generic Work Requires Social Acceptance of a Would-Be Broker: Reputation & Network Integration Tests

To the extent that a broker advocates something new, there is no guarantee that the proposal will work in our market, with our company processes, staffed by our people. The proposal involves uncertainty, so it requires trust; the more uncertain the proposal, the more trust required. Would-be brokers needed to be reputable.

These are data averaged across a few hundred investment bankers in the mid-1990s sorted by reputation into those with above-median reputation (solid dots), versus those with median or below (hollow dots).

Graph is from Figure 2.8 in Burt, "Network Structure of Advantage" (2013 manuscript).

The boutique investment bank, Moelis — "Best Global Independent Investment Bank" in 2010 and "Most Innovative Boutique of the Year" in 2011 — nicely illustrates the competitive advantage of reputation as an entrée to brokerage opportunities (case at www.sbs.oxford.edu/reputation/cases).

"Differences in detail aside, most social scientists agree upon two aspects of reputation: first, knowing a business partner’s past behavior mitigates uncertainty about his future performance; second, reputation demonstrates the person’s credibility as an honest business partner and reduces the uncertainty associated with trusting him.” (Hillmann and Aven, 2011, AJS, page 485)
Network Integration Tests

Returns to social capital are diagnostic of social barriers to coordination. Recall that reputation is critical to successful brokers. Every network broker is probably suspect from time to time so as not to benefit from brokerage, but when a category of people are systematically denied returns to social capital, we have likely found a social barrier to coordination.

Former Dean Witter executive on integration after merger with Morgan Stanley: "They treated us like we were the Clampetts. We would have meetings with them, and they would ask to present first and then just leave. They wouldn't stay for us. Maybe they had somewhere to go." It is a story the drips with irony: Here is a union engineered by some of the world’s foremost experts in the art of mergers and acquisitions. They made huge personal fortunes putting companies together, collecting their fees, then walking away. But this time they had to live with the combination they created. (Fortune, 2005 May 2, Bethany McLean & Andy Serwer)

see Appendix VI for network metrics identifying people treated as outsiders in an organization.
Network Integration Tests (continued)

Diversity

"That's an excellent suggestion, Miss Triggs. Perhaps one of the men here would like to suggest it." (Punch, 8 January, 1988)
Four Summary Points

CONTEXT: Network Structure Is a Proxy for the Distribution of Information
For reasons of opportunity, shared interests, experience — and simple inertia — organizations and markets drift toward the bridge-and-cluster structure known as a “small world.” Over time, information becomes “sticky” within clusters, diverent between clusters.

EMPIRICAL FACT: In Which Network Brokers Have a Competitive Advantage
Bridge relations across the structural holes between clusters provide information breadth, timing, and arbitrage advantages, such that network brokers managing the bridges are at higher risk of “productive accident” in detecting and developing good ideas. Network brokers tend to be better compensated than peers, more widely celebrated than peers, and promoted more quickly to senior rank relative to peers; in short, brokers do better.

MECHANISM: But Personal Engagement is Essential to the Advantage
There is no advantage or disadvantage to affiliation with network brokers. Advantage comes from personal access to structural holes. Advantage does not result from exclusive access to the information of diverse contacts so much as it results from personal skills developed from translating information between diverse contacts. Brokers develop skills of analogy and metaphor for seeing and communicating across diverse ways of thinking and behaving. Network advantage affects performance less for who you know than for who you are. In other words, social capital is a forcing function for human capital, transforming network brokers into people stronger than they would otherwise be.

CONTINGENCY: Broker Reputation Is Critical, Which Creates Analytic Tests for Network Integration
Reputation is critical to benefiting from advantage. The organization depends on able leaders exploring networks to search out and implement ways to add value, but too much uncertainty puts the enterprise at risk. Chains of command broken in service of company interests can just as easily be broken in service of personal interests, or in service of well-intentioned but strategy-eroding interests. Reputation is the way would-be brokers overcome the suspicions with which brokers can be viewed. So what kinds of people are not trusted to be network brokers?
Appendix Slides
Building Your Network: A Broker Network Can Result from Always Being a Broker or from Punctuated Brokerage

Figure 6 in Burt & Merluzzi (2013), "Path Dependent Network Advantage"
In Sum: Individuals Receive Different Returns to Brokerage

Graph A is from Figure 2.3 showing achievement increasing with more access to structural holes in open networks. Circles are z-score residual achievement for 1,986 observations averaged within five-point intervals of network constraint in each of six management populations (analysts, bankers, and managers in Asia, Europe, and North America, see discussion of Figure 2.3 in Chapter 2: heteroscedasticity is negligible, $X^2 = 2.97, 1$ d.f., $P = .08$). Bold line is the vertical axis predicted by the natural logarithm of network constraint. Graph B shows the raw data averaged in Graph A. Vertical axis is wider to accommodate more variable achievement. Heteroscedasticity is high due to achievement differences between advantaged individuals ($X^2 = 269.5, 1$ d.f., $P < .001$), but the association between achievement and network advantage remains statistically significant when adjusted for heteroscedasticity (Huber-White, $t = -8.49$). Bold lines in graph B are hypothetical, distinguishing high-yield from low-yield network advantage.

A. Achievement Scores for People in Open Networks Are Higher than Peers on Average ($r = -.58, t = -6.78, n = 85$)

B. But Vary Widely between the Advantaged Individuals (overall $r = -.24$, $t = -9.98, n = 1,989$)
Appendix VII: Network Endogeneity

Most Distributed Leadership (slow, happy)

Most Centralized Leadership (fast, unhappy)

The four networks are from the Bavelas-Leavitt experiments on leadership in task groups. The WHEEL is a traditional bureaucracy in which C is in charge. The other three networks involve distributed leadership (all five people in the CIRCLE; B, C, and D in the CHAIN; C and D in the Y-NETWORK). More distributed leadership is associated with more messages (M), slower task completion, and greater enjoyment (E). Speed, messages, and enjoyment scores are from Leavitt (1951). Number of contacts (N) and network constraint (NC) are computed from binary ties in the sociograms (number of contacts equals number of non-redundant contacts in these structures).

Figure 2.5 in Burt, "Network structure of advantage" (2013 manuscript)
Common Network Forms

What Is the Active Ingredient in Closure that is the Advantage for Outsiders?

Broker
C = 23.6
(.07 density, .05 hierarchy)

Bowtie
C = 46.3
(.40 density, .00 hierarchy)

Partner
C = 51.7
(.40 density, .21 hierarchy)

Clique
C = 54.0
(.80 density, .00 hierarchy)

from Burt, "Sometimes they don't want to hear it from a person like you," (2012, L’Impresa)
Partnering Is the Active Ingredient that Links Network Constraint with Success for People Excluded from Brokerage

Kinds of Networks Are Similarly Likely across Kinds of Managers ($\chi^2 = 0.15, 2$ d.f., $P = .93$)

Kinds of Networks Have Different Consequences for Kinds of Managers ($F = 3.77, 5-278$ d.f., $P < .01$)

from Burt, "Gender of social capital" (1998, Rationality and Society) and Figure 7.4 in Neighbor Networks. See Appendix II on mapping individuals into the three network categories, Appendix VI on network diagnostics identifying outsiders.
When a strategic partner sponsors your access to structural holes, it creates hierarchy in your network.

from Burt, "Gender of social capital" (1998, Rationality and Society) and Figure 7.5 in Neighbor Networks.