NETWORK STRUCTURE OF ADVANTAGE, GOVERNANCE: CLOSURE, TRUST, STATUS, AND REPUTATION

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From the Introduction

I first summarize mechanisms of network advantage from management research. Chapter 2 is about the production side to network advantage, describing how certain networks provide an advantage in detecting and developing valuable opportunities. Chapter 3 is about the audience side to network advantage, describing how advantaged people are held in check by the network governance mechanisms of trust and reputation. Chapter 4 then shows that the Chapters 2 and 3 network mechanisms observed in management are similarly evident in virtual worlds.

The unit of analysis is a person, ego, surrounded by a network of contacts within a broader market or organization. This image of ego in her network is often discussed as an “ego-network” (Wellman, 1993), but was initially discussed as a “social atom,” the minimum image that locates the individual in the surrounding social. Here is Jacob Moreno (1937:213), the father of American network analysis, writing early in his work on sociometry: “...we arrive at the concept of the psychological geography of a community. Viewing the detailed structure of a community we see the concrete position of every individual in it, also, a nucleus of relations around every individual which is ‘thicker’ around some individuals, ‘thinner’ around others. This nucleus of relations is the smallest social structure in a community, a social atom.” My focus is how the network around ego, her social atom, creates advantage. Network forms associated with advantage are often discussed as social capital (Coleman, 1988; Burt, 1992, 2005; Portes, 1998; Putnam, 1993, 2000; Lin, 2002), but I here put aside the social capital abstraction to speak simply in terms of advantage.

Moving to Chapter 3, closure is about governance. The clusters evident in Figure 1.2 generate trust and reputation at the top of the company. Research on closed networks was energized by Granovetter’s (1985, 1992) discussion of economic
transactions in terms of social context: “Relational” embedding refers to a transaction between people who have history and investment with each other; the transaction is embedded in an existing relationship. “Structural” embedding refers to a transaction between people who have many mutual contacts, i.e., people in a closed network; the transaction is embedded in the network surrounding the transactors. Strong relations between and around the two people create a wide bandwidth for information flow. To the extent that two people know each other well (relational embedding), and have many mutual friends in the closed network around them (structural embedding), bad behavior by either person is likely to become known to the other. Knowing that bad behavior will be discovered, each person is less likely to behave badly for fear of the reputation damage that would result, which lowers the risk of trust between them, which increases the probability of trust. The analogy is life in a city versus life in a village. In a village, dense connections between people make it likely that bad behavior will be discovered and discussed, to the detriment of the misbehaved person. With the likelihood of bad behavior decreased, the risk of trust decreases, so the probability of trust increases.

Thus, closed networks facilitate trust by creating a reputation cost for behaving in an untrustworthy manner, which aligns opinion and behavior, making collaborations possible that would be otherwise difficult or unwise. Examples abound online: the Amazon rating system, eBay’s reputation system, the gender-shelter site dontdatehimgirl.com, the gender-display mobile app lulu, and industry watchdog sites such as oyster.com and hellopeter.com. Barker (1993) provides ethnographic description of closed-network governance within an organization (cf. Blau, 1955). Bernstein offers thick description within a legal framework of reputation governance in the cotton industry (Bernstein, 2001, esp. pp. 1745-1762), the diamond trade (Bernstein, 1992, esp. pp. 138-145), and Midwest supplier relations (Bernstein, 2014). Other widely-cited closure arguments are economist Greif (1989) arguing that trust within closed networks facilitated medieval trade in the Mediterranean, lawyer Ellickson (1991) describing social norms enforced within closed networks among Shasta County ranchers and farmers, and sociologist Coleman (1988) arguing that closed networks provide social control, which political scientist Putnam (1993) adapted to describe regional performance differences in civic government.
The criterion evidence for closure providing network governance is that trust is more likely, and reputations more persistent, where people are more embedded in a closed network. The evidence, and its use to produce network metrics diagnostic of coordination, development, and diversity issues in an organization are the subject of Chapter 3. More, the brokerage and closure principles are linked in the chapter: a target audience has to accept a would-be broker as a reputable source of information. The network brokers bridging groups in the Figure 1.2 healthcare company have an advantage in producing new ideas and growth (Chapter 2), but their advantage is held accountable to colleague interests through trust and reputation created by audiences inside the closed networks defining groups (Chapter 3).
Chapter Three

Network Structure of Advantage, Governance:
Closure, Trust, Status, and Reputation

This is the second of a two-part review of the way in which certain network structures create advantage. I focus on replicated research results (occasionally presenting new results that link replicated results) concerning the two core principles about network advantage: brokerage and closure. This second part is about closure. Closure provides governance within a network; maintaining stability and safety while people get better at what they already know. The gist of the argument is that dense communication channels in a closed network make it likely that behavior and opinion inconsistent with group standards will be detected and discussed. With detection and discussion likely, behavior inconsistent with group standards carries a reputation cost that makes bad behavior less likely, which lowers the risk of trust, thereby increasing the probability of trust. The criterion evidence for closure as a network advantage is that trust is more likely, and reputations more persistent, where people are more embedded in a closed network. Why this is so, and how it produces network metrics diagnostic of coordination, development, and diversity issues in an organization are the subject of this chapter. More, the brokerage and closure principles are linked in that the audience targeted to accept a broker’s information has to accept the would-be broker as a reputable source. Network brokers bridging across groups have an advantage in producing new ideas and growth (Chapter 2), but their advantage is held accountable to company interests through trust and reputation created by audiences inside the closed networks defining groups (Chapter 3).

The rewards associated with network brokers do not shine an attractive light on leaders in closed networks. Closed networks might seem — after seeing the material presented in Chapter 2 — a refuge for weak and frightened people clinging for reassurance to one another. Such an inference would be premature. Trust and reputation are built within closed networks, and would-be network brokers who do not have positive reputation do not receive the rewards that would otherwise be associated with their access to structural holes. As sites in which trust and reputation are produced, closed networks
provide governance. Where Chapter 2 was about the network around a person improving the person’s ability to detect and develop good ideas, this chapter is about the network improving the person’s acceptance by a target audience. Where Chapter 2 was about the network as a production factor, this chapter is about the network as a governance factor.

THE AUDIENCE SIDE TO NETWORK ADVANTAGE
Access to structural holes creates advantage in detecting and developing opportunities, but benefitting from those opportunities involves an audience, a set of people who accept the broker as a source of information, a purveyor of good ideas. Certain audience questions are to be expected: Is the broker known for competence in the proposed idea? Will he look after my interests if complications arise after accepting his proposal? Is the would-be broker an appropriate source of actionable information for a person like me? These are questions about trust and social propriety.

In the short run, people rely on visible signals to decide whether a would-be broker is appropriate and trustworthy (Gambetta and Hamill, 2005; Pentland, 2008). Job rank and network status are two such signals often used in management. Job rank indicates social standing in a formal organization: Who is in charge? Network status indicates social standing in an informal organization: Who is the expert sought out by other experts? Would-be brokers attractive on either signal are more likely to be accepted as brokers.

Job Rank as Signal
People in more senior job ranks do more political, less routine, kinds of work that require understanding and coordinating the interests of others. Understanding and coordinating others’ interests should be facilitated by the information benefits of bridging structural holes, so it is not surprising to see in Figure 2.7 in the previous chapter that people in more senior job ranks benefit more from network advantage.

As much as job rank is a production factor, however, it is also an audience factor. Senior rank carries bureaucratic authority. The boss might seem incompetent or
untrustworthy, but he is culpable and in charge. “The boss asked me to . . .” is a perfectly adequate explanation to colleagues for your acceptance of the boss as broker. More, people in senior positions are often defined as brokers by the formal organization. Each group managed is another social cluster in the manager’s network. So it is not surprising to see more structural holes in the networks around more senior people, again as illustrated in Figure 2.7 by the less-constrained networks around more senior people (and for other organizations in Figure 2.3 in the previous chapter). Thus, senior job rank is a signal that the occupant has been granted authority by a higher power, and that visible endorsement can calm audience concerns about the occupant as a network broker.

**Network Status as Signal**

In a way similar to job rank, network status can be a contingency factor for brokerage. Recall the interpretation of network status as a signal of quality (introduced in the discussion of Figure 2.3 in the previous chapter). To the extent that high-status people are known for ability and integrity, the high status of a would-be broker can allay concerns. Would-be brokers of low status can be unattractively risky, even illegitimate. As job rank indicates high social standing in the formal organization, network status indicates high social standing in the informal organization. As job rank is associated with more access to structural holes and higher returns to brokering across holes, network status is associated with more access to structural holes (Figure 2.3) and should be associated with higher returns to access.¹

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¹It will become clear in this and the next section that network status and access to structural holes are complementary assets closely related in concept and fact, such that advantage is more clearly revealed when the two variables are analyzed together as complements. Unfortunately, the two concepts have developed with little reference to one another. There are exceptions — Podolny (2001), Rider (2009), Zaheer and Soda (2009), Shipilov, Li and Greve (2011), and Ferrin, Parker, Cross and Dirks (2012) — but for the most part research papers report on one or the other concept. For example, the 2012 Annual Review of Sociology contains a chapter on brokerage and a chapter on status. In the chapter on status, there is no mention of brokers, brokerage, or structural holes (Sauder, Lynn, and Podolny, 2012). Status is mentioned several times in the chapter on brokerage, but as a qualitative attribute, not as a network correlate (Stovel and Shaw, 2012). I hasten to note that Stovel and Shaw speculate about brokers achieving status (see pages 146 and 153-154). To say that the two Annual Review chapters are independent says nothing negative about either. My point is only that status and access to structural holes are too rarely discussed together.
Merton’s (1968) “Matthew Effect” in science is a familiar illustration. Prominent scientists are more likely to have their new ideas recognized and acted upon, which subsequently enhances their prominence, so status differences continue through time. Status differences continuing through time can be explained in multiple ways (Podolny and Phillips, 1996; Podolny, 2005:Chp. 4; Burt, 2005:Chp. 4, 2010:Chp. 6; Bothner, Podolny, and Smith, 2011; Bothner, Kim and Smith, 2012), but Merton’s focus on status and new ideas in science is an explanation particularly relevant to contingent returns to brokerage. Merton (1968:60) argues that ideas proposed by prominent scientists simply receive disproportionate attention: “a single discovery introduced by a scientist of established reputation may have as good a chance of achieving high visibility as a multiple discovery variously introduced by several scientists no one of whom has yet achieved a substantial reputation.” Disproportionate attention increases the odds of learning (p. 62): “since it is probably important, it should be read with special care; and the more attention one gives it, the more one is apt to get out of it.” Couple Merton’s discussion with the fact that people whose networks bridge structural holes are more often the source of good ideas, and it follows that network status eliciting more careful attention to broker good ideas is a contingency factor for brokerage.²

Empirics

Empirical support exists at the top and bottom of the status hierarchy. For example, Rider (2009) offers quantitative evidence in his study of placement agents, the people who broker connections between investors and venture funds. Across a thousand ventures funds from 2001 to 2006, higher-status brokers have preferred access to

²I reason from the perspective of an audience reacting to a broker. One could reason from the broker’s perspective: The people drawn to brokerage could be kinds of people likely to achieve status. This question could be addressed with Kleinbaum and Stuart’s (2014) research design by studying networks before and after a person achieves status to determine the extent to which a person’s access to structural holes precedes, or results from, achieving status. I am not aware of such analysis. Another route into the question is to add personality to the analysis. For example, self-monitoring, a psychological concept of adapting one’s behavior to social situations, is correlated with access to structural holes (Mehra, Kilduff, and Brass, 2001). Given personality and status correlated with access to structural holes, status should be correlated with personality. However, the lack of an achievement effect from interaction between network and personality (Burt, 2012; Chapter 5 in this book), means that personality-induced correlation between status and access to holes cannot explain the contingent returns to network advantage illustrated in Figure 2.6 in the previous chapter and Figure 4.1 below.
higher status funds. Grigoriou and Rothaermel (2010) show that pharmaceutical firms produce more patents, and more consequential patents, when their patent authors include both authors who broker between groups in the company and authors who connect across the company. At the other extreme, Zuckerman et al. (2003) show that low-status people are more successful when they are not brokers. Zuckerman et al. use the diversity of movie genres in which a person acted in 1992-1994 to predict the person’s later success finding employment in 1995-1997. Later success is more likely for young (low status) actors who concentrate their acting within a single genre.

——— Figure 3.1 About Here ———

Figure 3.1 contains evidence more directly relevant to this chapter. The data to the left describe people in a large software company shortly after launching a new product in Asia-Pacific markets. The data to the right describe HR officers in a large American commercial bank. Within each organization, people are categorized as high versus low status (divided at median) and within each category, compensation on the vertical axis is predicted by network constraint on the horizontal axis. Compensation and network constraint scores within five-point intervals of network constraint to define the dots in Figure 3.1. Thin lines through hollow dots show the association between compensation and network constraint for people in the bottom half of the status hierarchy. Bold lines through solid dots show the association for people in the top half of status. The difference is striking. People above-average in status clearly benefit from network advantage. Compensation drops sharply with decreasing access to structural holes (-.96 and -.98 correlations with network constraint). For people in the bottom half of the status hierarchy, access to structural holes has no association with compensation (-.03 and -11 correlations).³

³Figure 3.1 illustrates advantage contingent on status, but my confidence in the illustration comes from more careful comparison between people of low versus low status. I began with models used to predict compensation in published analyses of the two organizations. Controls in the regression models include job rank, age, gender, race, function, seniority, and region. I added to each model a control for employee status (eigenvector measure, footnote 5 in previous chapter), and an interaction term between log network constraint and high versus low status (divided at the median as in Figure 3.1). The published regression coefficient for log constraint predicting annual compensation across employees in the product launch (Burt, 2010:70) disaggregates into a weak coefficient for low-status employees (-.14, -1.07 t-test, P ~ .29) versus a strong coefficient for high-status employees (-.66, and the -.52 slope difference between
Local-Structure Cue to Global Structure

The contingency illustrated in Figure 3.1 highlights the importance of local-structure cues to global structure. Kleinberg (2000) raises this issue as a solution to the problem of detecting bridge relations. Bridge relations are likely to exist and are easily identified by people who have a bird’s eye view across a network. But how do people limited to local knowledge find the bridge relations that link beyond their immediate social circle? The problem can be solved if local structure contains cues to global structure. Kleinberg’s (2000) analysis implies that bridges are most easily detected in networks of small, linked clusters, but does not provide details on what constitutes a local-structure cue.4

The Figure 2.4 graph in the previous chapter connects status and access to structural holes. The connection reveals a local-structure cue to global-structure: seeing a person behave locally as a network broker is a cue that the person has status in the broader network (which could be one reason why we resent people behaving like a broker locally when we suspect that they do not have status in the broader network, Halgin, Borgatti, and Mehra, 2014). In a related vein, Everett and Borgatti (2005) link local and global access to structural holes. They measure access with Freeman’s (1977) betweenness index, computing a local-structure betweenness score for a person’s direct contacts and a global-structure betweenness score for the person’s low- versus high-status employees is statistically significant, -2.49 t-test, P ~ .01). The published regression coefficient for log constraint predicting bonus compensation across the HR officers (Burt, 2010:85) disaggregates into a weak coefficient for low-status officers (-.16, -1.54 t-test, P ~ .13) versus a strong coefficient for high-status officers (-.53, and again, the -.37 slope difference between low- versus high-status officers is statistically significant, -2.48 t-test, P ~ .01).

4These are not Kleinberg’s words, so let me quickly link the text to Kleinberg’s model. Kleinberg locates individuals in a lattice; everyone is connected to their left-right and up-down neighbors. The probability that a bridge connects ego to some person k selected at random is set to \( r^{-\alpha} \), where \( r \) is the lattice distance between ego and k (1 to nearest neighbors, 2 to diagonal neighbors, etc.), and \( \alpha \) is a clustering coefficient (\( \alpha \geq 0 \)). Fractional values of the clustering exponent mean that local structure is a poor indicator of global structure; near and distant contacts are likely to be bridges. As the clustering exponent increases, bridges are concentrated in near neighbors, so the network is a system of small clusters with near neighbors providing bridges to other clusters. Kleinberg (2000) shows that the quickest distribution of information occurs when the clustering exponent equals two, which concentrates bridges in near neighbors. Therefore I say in the text that Kleinberg’s model implies that bridges should be most readily detected in networks of small, linked clusters (see Watts, Dodds, and Newman, 2002; Van de Rijt, Ban, and Sarkar, 2008, for local search using attribute homophily as a proxy for network structure; Reagans, Zuckerman and McEvily, 2004, for argument and evidence that attribute hetrophi is a poor substitute for network structure).
direct and indirect contacts across the broader network. Everett and Borgatti report correlations of .88 to 1.00 between local and global betweenness scores for several small networks taken from prior research. They report correlations of .86 to .99 for random networks of 200 to 500 nodes. Most management study populations contain a few hundred people with ego networks varying from zero to a few dozen contacts, so I expect strong correlation in most management populations between advantage indices computed from local versus global network structure. More, the results in Figure 3.1 illustrate the point that success depends on the cue. Returns to brokerage are most apparent when local-structure access to holes occurs with global-structure status.

Reputation as Signal
Network status generally, and job rank more specifically, as status defined by the formal organization — are inherently exclusive. As a practical matter, only a fraction of management can occupy the top job ranks and people in those job ranks tend to have high network status. Similarly, status is about being known as one of the best, about occupying a position at the top of the hierarchy, about winning a zero-sum game (Barron and Rolfe, 2012; Sauder, Lynn, and Podolny, 2012; Sorenson, 2014). If the people offering a service all have the same network status, then status loses its value as a signal of superior quality, whereupon audiences search for new distinctions believed to differentiate the “best” from the rest.

But what about people lower in the hierarchy? As a rule, the majority of people in a population have not yet made it to high status, to the level of senior job ranks. Figure 3.1 shows that people below average in status are denied the benefits associated with access to structural holes. If benefits depend on high status, then people below average in status have little incentive to act on network advantage — they can be loyal and hope for promotion in due course, or they can try to work around the exclusivity barrier using some kind of entrepreneurial activity.

Reputation Distinct from Status
The concept of reputation is a useful complement to status. Reputation is what the audience expects of a person — she is known to be trustworthy, he is aggressive, she is an expert in her field. Podolny (2005:13-21) takes pains to distinguish status as a
network concept versus reputation as a behavioral concept, but the interpretation of status as an indicator of perceived quality is no less than reputation an audience expectation about behavior. The two concepts differ in substance with status measured in terms of affiliations from which audiences are expected to infer quality versus reputation measured directly in terms of audience evaluations, but the substantive conditions to which they refer often occur together in theory and fact. For example, Rindova et al.’s (2005) widely-cited two-dimensional analysis of reputation advances a reputation concept very similar to the concept of network status: reputation increases as (1) an organization is prominent in the minds of its audience – where prominence is defined by the choices of influential third parties, and (2) the organization is perceived to produce quality goods. The first dimension is exactly status measured by a network eigenvector (footnote 5 in the previous chapter), and the second dimension is Podolny’s presumed inference drawn by audiences viewing the first dimension. Consistent with Rindova et al.’s argument, Morrison et al. (2013) study investment bank reputation in terms of the quality and volume of a bank’s relationships — using a network eigenvector model of tombstone affiliations similar to Podolny’s (1993) use of the same model and data to measure network status. None of the work cited here goes so far as to say that network status and reputation are the same thing, but it is safe to say that network status and reputation are defined in substantively distinct ways that overlap extensively, so it is not surprising to see discussions of one involve discussion of the other (Fombrun, 1996; Rindova et al., 2005; Washington and Zajac, 2005; Jensen and Roy, 2008; King and Whetten, 2008; Rider, 2009; Lange, Lee, and Dai, 2011; Barron and Rolfe, 2012; Chandler, et al., 2013; Sorenson, 2013).

Figure 3.2 is a concrete illustration of the loose conceptual overlap between status and reputation. The figure is a box-and-whisker plot of reputation scores on the vertical axis across increasing status on the horizontal. The data describe senior investment bankers in a large financial organization (Burt, 2010:85-93, 151ff.). As defined in the organization, banker reputation is measured annually on a good-to-bad axis by the average evaluation a banker receives from colleagues. Reputation varies from colleagues agreeing that a banker is outstanding (4.0 average evaluation), down to colleagues agreeing that he is terrible (1.5 average evaluations). I measure network
status in the usual way by the network eigenvector for each year of evaluations (footnote 5 in the previous chapter, with relationship $z_{ji}$ here equal to one if colleague $j$ evaluated banker $i$, zero otherwise).

The association between status and reputation is discernable, but loose. Average reputation increases with status in Figure 3.2 (.17 correlation, 3.16 t-test, $P < .01$), but status is a poor predictor of reputation in two ways. First, reputation is not universally poor at the lowest levels of status. Low-status bankers vary widely in reputation, from the very worst reputations in Figure 3.2, to the most positive. Low status is less a signal of poor reputation than it is an ambiguous signal.

At the other extreme, high-status bankers tend to have positive reputations, so high status is a good signal of positive reputation — but not a certain signal. This is the second way status is a poor predictor of reputation. The higher a person rises, the more likely the person has detractors. Minimum reputation becomes more positive in Figure 3.2 as banker status increases, but maximum reputation also becomes less positive. The most positive reputations occur among the low-status bankers. At low levels of status, bankers can thrive within a small niche, universally appreciated by the few colleagues who know them (for more fulsome data on such effects, see Kovács and Sharkey, 2013, on the drop in average product evaluations associated with products becoming visible to broader audiences through awards).

**Reputation as Signal**

Regardless of similarities and differences in what constitutes status versus reputation, both concepts are similarly contingency factors for brokerage, which is to say, both can calm audience concerns about a would-be broker. Positive reputation lowers audience uncertainty about a would-be broker just as high status lowers uncertainty. So viewed, reputation can be analyzed as a contingency factor — a concept defined by what it does more than what it is.\footnote{Barron and Rolfe (2012) are particularly interesting on the idea of comparing status and reputation for what they do rather than what they are. With respect to research strategy, treating reputation as a contingency factor shifts focus from deciding what reputation is to finding a reliable production function.} For example, Rider (2009) studies the network status of firms
offering venture capital funds, the returns earned by placement agents who act as brokers matching funds with institutional investors, and agent reputation as a contingency factor. Agents with more positive reputations enjoy higher returns to their brokerage. Rider (2009:578-579) explains: “a broker’s reputation for consistently representing actors of high quality is a valuable, intangible asset that enables a broker to realize future rents on the brokerage position. . . If a positive reputation reduces the costs of assuaging potential exchange partners’ concerns, then the returns to brokerage should be positively related to a broker’s reputation.” Hillmann and Aven (2011: 485) put the matter nicely in preface to their analysis of Russian entrepreneurs: "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." In a related vein, Nee and Opper (2012: 211) describe Chinese entrepreneurs building reputation in the course of brokering connections: “Through personal introductions and fine-grained information passed through social networks, the ‘broker’ typically signals trustworthiness and reputation of the prospective business partners. Moreover, it is in the broker’s interest to make good recommendations, as most business partners will tend to reward their networking contacts in one way or another. Such introductions can span the social gaps, or ‘structural holes’ between groups. The owner of a Ningbo-based automotive company, for example, found her new business partner through a close friend working in the local highway construction business. The friend introduced her to a firm in Beijing that was looking for a reliable production partner in the Ningbo area.”

with which alternative conceptions of reputation as a contingency factor can be compared. I am using the achievement-brokerage association as a production function. Economic theory has long had production cost functions for which reputation is a contingency factor allowing a reputable firm to sell product at a higher price than corresponding product from a disreputable firm (e.g., Shapiro, 1983). Of course, many characteristics can function as contingency factors — even physical appearance can be a reassuring signal to audiences nervous about a would-be broker (O’Connor and Gladstone, 2012).

6The focus on individual relationships in the Nee and Opper quote highlights an important caution. The specific people with whom a would-be broker is reputable can matter. Granovetter (1985:490-491) cautions against an “undersocialized” conception of reputation: “Economists have pointed out that one incentive not to cheat is the cost of damage to one’s reputation; but this is an undersocialized conception of reputation as a generalized commodity, a ratio of cheating to opportunities for doing so. In practice, we
Replicable Results

There are three virtues to bypassing the complexity of defining reputation in terms of what it is to instead define it as a contingency factor in terms of what it does. One virtue is replication. Reputation results are more replicable because contingency provides construct validity. Reputation can mean being known for any or all of a great variety of qualities. The result is that reputation is defined in different ways by different scholars, making results difficult to compare across scholars (Lange, Lee, Dai, 2011; Barnett and Pollock, 2012). Statistically significant correlations are likely to occur with details of reputation for specific behaviors, but it will be difficult to generalize the correlations into construct-validity hypotheses about reputation because of the diversity that studying details allows. In contrast, reputation as a contingency factor is limited to qualities that reassure target audiences, making a would-be broker more attractive, providing more access to more rewarding opportunities for brokerage. This construct validity is no better than the comparability of achievement and networks across research projects, which is by no means perfect, but evidence has been successfully accumulating for many years across different scholars studying achievements associated with structural holes.

Of the many dimensions on which reputation can be studied, contingency focuses on the primary dimension, the good-bad dimension. That focus contrasts with studying reputation in terms of specific behaviors for which a person is known. Something is lost in treating reputation as a contingency factor, but it is not clear that the something lost is essential. The contrast between good and bad is a primary dimension to human evaluation. Evidence of good-bad primacy is often attributed to Osgood, Suci, and Tannenbaum’s (1957) factor analyses of semantic-differential data. They report three
recurring dimensions to evaluations of words and phrases: a good-bad contrast (termed the primary "evaluation" dimension, which describes 69% of common variance), a strong-weak contrast (termed "potency," 15% of common variance), and an active-passive contrast (termed "activity," 13% of common variance). Dimensional analyses of network data also show managers distinguishing relations primarily on a good-bad dimension of closeness and secondarily on a personal-impersonal dimension (see Figure 3.7 later in this chapter). More generally, there is a good-bad contrast measured by Fortune’s “Most Admired” ratings of corporations, which are often used as measures of reputation (Brown and Perry, 1994), a good-bad contrast measured by eBay ratings used to define a potential seller’s reputation (Resnick et al., 2006), or the good-bad contrast measured by peer evaluations in the next section to distinguish bankers with positive reputations. Osgood et al. (1957:38) conclude that the good-bad contrast, "plays a dominant role in meaningful judgments, here accounting for almost 70 per cent of the common (extracted) variance."

**Broader Population Eligible for Brokerage**

Although reputation is akin to status in reassuring a would-be broker’s audience, it is attractive as a complement because it does not depend on exclusivity. This is the second virtue to thinking about reputation as a contingency factor. In contrast to status, many people can have positive reputations without their numbers eroding the value of their individual positive reputations. For example, most doctors have positive reputations with their patients. Extensive training, peer pressure, and malpractice lawyers lessen uncertainty about trusting a physician. I might prefer to be treated by a physician affiliated with a high-status hospital, but that is the expected effect of status. Certain physicians have high status, but many physicians have positive reputations. To the extent that more people can have positive reputations than can have high status, and to the extent that reputation is sufficient to allay concerns about a would-be broker, reputation makes access to structural holes an advantage for a population much wider than the elite population of people already established with high status. The point is nicely illustrated by local restaurant reviews posted online (Luca, 2011). Restaurants build a positive reputation as positive reviews are posted, but it is the independent restaurants more than chain restaurants whose revenue most increases with positive
reputation. In other words, reputation opens the local market to the better among otherwise unknown local restaurants.

The key question is whether reputation is sufficient for a person to be accepted as a broker. I can answer “yes” for at least the one population in which I have status and reputation data. Figure 3.3 displays data on the investment bankers whose status and reputation were displayed in Figure 3.2. The vertical axes in Figure 3.3 measure relative compensation. Zero indicates a banker who received compensation typical that year for someone with his job rank, working in his office location, with his years in the firm, and so on (the bankers were included with senior people from other organizations in Figure 2.2 in the previous chapter). A score of one on the vertical axis indicates a banker whose compensation is one standard deviation higher than peers, a score of negative one a banker whose compensation is one standard deviation lower than peers. The horizontal axes measure a banker’s access to structural holes within the organization, large open networks to the left, small closed networks to the right.

The first graph in Figure 3.3 shows average returns to brokerage for all of the bankers. Network brokers on average receive compensation significantly higher than peers with closed networks. The graph to the right shows average returns for two subgroups of bankers: those with above average reputations versus those with below average reputations. A banker’s reputation is “low” if he is in the bottom half of reputation scores. Described by the dashed regression line in Figure 3.3B, bankers with low reputations show negligible returns to brokerage (t = -0.40, P ~ .69). Bankers with “positive” reputations are described by the bold regression line through black dots.

7The regression lines displayed in Figure 3.3B pass through the averaged data in the graph, but the slope adjustments reported in the text are for individual bankers in an analysis of covariance model adjusting by banker reputation the benefits of access to structural holes. As with Figure 3.1, the analysis of covariance used to test for the contingency illustrated in Figure 3.3B predicts achievement (z-score compensation) from log network constraint, plus slope adjustments for the two categories of reputation, holding constant controls used in published work with these data: job rank, average peer evaluation, seniority, minority status, and location (Burt, 2007, 2010:92). For the purposes here, I added each banker’s network status as a control, so test statistics reported in the text are with status held constant. Test statistics were obtained using the “cluster” option in Stata to adjust for repeated annual observations of the same bankers. Compensation increases with network status regardless of reputation (t = 2.95), but also increases with reputation regardless of status, as reported in the text.
in the graph. These are bankers in the top half of reputation scores. For them, the bold regression line in Figure 3.3B shows compensation increasing sharply with more access to structural holes (-.53 regression coefficient predicting z-score compensation from log network constraint, t = -2.68, P < .01). Moreover, note the much higher average levels of compensation achieved by reputable network brokers. The two vertical axes in Figure 3.3 are on the same scale, 2.5 standard deviations above peers down to 1.5 standard deviations below peers. On this scale, the compensation scores averaged across all bankers (left graph) are compressed toward the center of the graph. In contrast, compensation varies widely between above-average reputation bankers, with reputable bankers in large, open networks receiving compensation multiple standard deviations higher than peers. This is exactly the strikingly contingent returns to brokerage that were illustrated in Figure 2.6 in the previous chapter. In short, would-be brokers do not need to hold a high-status position to enjoy the benefits of access to structural holes; status helps, but it is not necessary. To enjoy the benefits, would-be brokers just have to have positive reputation with people who know them.

Figure 3.1 and Figure 3.3 show that people with status or reputation in the top half of the population enjoy the benefits of network advantage, but Figure 3.4 displays more precisely the eligibility difference between status and reputation, showing the extent to which reputation defines a broader population of people eligible to broker. Across all 469 banker observations, the standardized regression coefficient for log network constraint predicting annual compensation is -.34, with a 95% confidence interval of plus or minus .08. Figure 3.4 describes how that aggregate correlation varies around each banker when the bankers are rank ordered from high to low social standing. The

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8 Observations were ranked from 1 to 469 by status or reputation score as a measure of social standing. Bankers with equal scores were ordered by random number. A sample of 48 colleagues was drawn for each observation: 24 people higher in the rank order and 24 lower. For bankers at either end of the rank order, the sample was as many as available (e.g., the sample around banker one is the 24 colleagues below him in the rank order, the sample around banker two is the one banker higher plus the 24 below him in the rank order, and so on). The correlation for an individual banker is then the correlation between compensation and log network constraint in the sample of colleagues around the banker. Moving averages of the correlations are displayed in Figure 3.4. The sample size of 24 was picked by re-running the analysis for increasing sample size, beginning with one (the banker, a colleague above, and a colleague below), and continuing to 30. Small sample variation made it difficult to see the association between correlation and social standing. The correlation between rank order and sample correlation is
horizontal axis intersects the vertical axis at the -.34 overall correlation. Dots below the horizontal axis indicate where the correlation is stronger than average. Dots above the axis show where the correlation is weaker than average.

The string of hollow dots in Figure 3.4 describes how the compensation-constraint correlation varies across levels of network status. The highest status score is banker number one, the second highest is number two, and so on down to 469 (bankers with identical status scores are ranked randomly within their score). A 95% confidence interval around the aggregate compensation-constraint correlation of -.34 varies from a low of -.42 to a high of -.26. The string of hollow dots passes into that interval at status rank 77 and passes out of that interval into significantly weaker correlation at rank 86. For all ranks below 86, the correlation is average or weaker than average. In other words, about 20% of the bankers — those in the top 86 of 469 status ranks — have status high enough to benefit from access to structural holes.

The string of solid dots in Figure 3.4 describes how the compensation-constraint correlation varies with reputation. The most positive reputation score is now banker number one, the second-most positive is number two, and so on down to 469. Again with respect to a 95% confidence interval around the aggregate correlation, the string of solid dots passes into the confidence interval at rank 192 and passes out of the interval into significantly weaker correlation at rank 206. For reputation ranks below 206, the compensation-constraint correlation is at one point close to average, but is usually significantly weaker than average. In other words, about 40% of the bankers — those in the top 206 of 469 reputation ranks — have reputation positive enough to benefit from access to structural holes. Thus the practical point that reputation broadens beyond rank and status the population of people eligible to be network brokers.

Three analytical points are also illustrated in Figure 3.4. First, the correlogram provides a useful picture of who benefits from access to structural holes. Figure 3.1 and Figure 3.3B, with their crude categories distinguished at median status or reputation,
combine people for whom access to structural holes is a great advantage with people for whom access provides no advantage. The correlogram highlights where the distinction between eligible and ineligible occurs (which provides useful organization diagnostics, discussed in the next section).

Nevertheless, and this is the second point, the social standing needed to be a successful broker seems to be defined by a threshold rather than an amount. The patterns in Figure 3.4 do not vary monotonically. It is not the case that the association between compensation and log network constraint becomes incrementally weaker for bankers further and further down the status or reputation rank order. Rather, the graph shows thresholds at about the rank-200th banker, where there is a sharp transition from the eligible to be brokers (low on vertical axis) to the ineligible (high on vertical axis). Bankers above a certain threshold of status or reputation benefit from access to structural holes. Bankers below the threshold do not.

Third, network advantage is not available to everyone. Status and reputation together leave half of the population ineligible to benefit from access to structural holes. And the people in Figure 3.4 are investment bankers; presumably a market-based line of work keyed to ability more than social standing. In lines of work more organized by process than opportunity, network advantage could be much more exclusive. How does the boundary between eligible and ineligible vary by kinds of work, organizations, and markets? Under what conditions does reputation greatly expand the population eligible by status to be brokers? Under what conditions is its expansion limited to little more than the people already made eligible by status?

Network Diagnostics for Evidence-Based Management

The thresholds in Figure 3.4 illustrate unobtrusive organization diagnostics with which common, difficult management problems in an organization can be addressed in a rigorous, analytical way. This is the third virtue to thinking about reputation as a contingency factor. Given returns to brokerage contingent on trust and reputation, categories of people not trusted in an organization can be identified by looking for places where rewards are not associated with brokerage. This does not mean that everyone should always be successful as a broker. It means that consistent failure by a category of people signals an integration problem. Diagnostic methodology using
correlograms similar to Figure 3.4 is discussed elsewhere (Burt, 2010:Chp. 7). Figure 3.5 contains three illustrative applications.

Figure 3.5A is a leader-development example. Network data were obtained on discussion relations for managers in two upper-middle job ranks in three divisions of a large electronics company. Network constraint scores locate managers on the horizontal axes in Figure 3.5A. The vertical axes distinguish managers by annual compensation. The top graph shows that compensation is higher for network brokers in the first two of the company’s three divisions (-5.66 t-test). The bottom graph shows no compensation association with brokerage in the third division (1.05 t-test). Further analysis showed that the strongest predictor of compensation in the third division (after job rank) was years of service. The longer a person worked in the division, the higher his compensation. Years in service was associated with compensation in the first two divisions, but network constraint was a stronger predictor.

The promotion issue surfaced because the vice-president managing the third division complained to top management about his people not being promoted to higher levels in the organization. Promotions always went to the other two divisions. The two graphs in Figure 3.5A explain why. Network brokers were rewarded in the first two divisions. In those two divisions, people developed the skills needed to exercise leadership higher in the organization. Such people were promoted. In the third division, network brokers received no compensation above what was appropriate for their years of service. In the third division, people were encouraged to be good supervisors, not leaders. On seeing the evidence, top management encouraged the vice-president to take early retirement — perhaps an unpleasant outcome for him, but less troubling than the misfortune he left for the company in the many people at the bottom of Figure 3.5A unprepared for higher office.

Figure 3.5B is an example of post-merger integration. The two graphs in Figure 3.5B are the same as in Figure 3.5A, except these are managers in the regional operations of a large computer company six months after one company acquired another. Managers are distinguished by legacy organization in Figure 3.5B. Managers in the top graph originated in the company that made the acquisition. Network brokers
are well compensated (-4.92 t-test). Managers in the bottom graph originated in the acquired company. There is no compensation association with brokerage (1.06 t-test). In fact, there is an empty space in the northwest of the graph at the bottom of Figure 3.5B where the high-compensation network brokers should be. The story here is that the merged companies both had strong cultures. Leaders in the acquiring company felt uncomfortable giving leaders in the acquired company the discretion enjoyed before the merger. Acquired executives were given titles, but little flexibility within the merged operations. Seeing the way things were, network brokers from the acquired company soon left for jobs in more welcoming organizations. Inefficient operations and poor morale plagued the merged operations.

Figure 3.5C is a labor-diversity example. Data on discussion and collaboration relations were obtained from a probability sample of managers in a large electronics company. Network constraint scores locate managers on the horizontal axis of Figure 3.5C. The vertical axis distinguishes managers by whether they were promoted to their current rank ahead of peers. The top graph describes promotions among the senior men. Network brokers were more likely to be promoted early (-5.56 t-test). The bottom graph shows that the same is not true for women and junior men. The positive association with network constraint in the bottom graph of Figure 3.5C shows that promotions for women and junior men were systematically delayed for network brokers (3.38 t-test). Sometimes punishment comes to people who try to be brokers when they are not accepted as such by the people whose collaboration is being brokered. The strategic response is to form a partner network through which excluded people achieve sponsored access to structural holes. Detailed discussion of this example, plus examples in which men need a partner, is available elsewhere (Burt, 2010:Chp. 7; see Figure 2.8 for simple partner networks).9

9The fact that returns to brokerage are contingent on broker reputation informs contextual studies of brokerage. For example, Vasudeva, Zaheer, and Hernandez (2013) compare firms for innovativeness (measured by patent volume and citations) and the extent to which their alliance networks span structural holes. The firms are further distinguished by whether they operate out of a "corporatist" country — which means that trustworthiness and cooperation are commonly espoused as proper behavior. Sweden, Denmark, Germany, and Japan top the corporatist culture scale (Vasudeva et al., 2013:652). The United Status, United Kingdom, and Canada are at the bottom of the scale. Regardless of the countries in which partners operate, innovation increases with access to structural holes as long as the broker firm operates
Evidence-based management (Pfeffer and Sutton, 2006) has obvious relevance to data-driven management issues such as operations, marketing, sales, and supply chain. Figure 3.5 illustrates that network metrics readily available from HR records and peer evaluations open heretofore soft, intractable, people issues — such as leader development, merger-acquisition integration, and diversity — to the rigor and clarity of evidence-based management.

**CRITERION EVIDENCE OF CLOSURE, TRUST, AND REPUTATION**

The preceding discussion sets a foundation in which trust and reputation play a critical role in the innovation and growth, the achievements, associated with access to structural holes. Thus we come to the role closure plays in generating trust and reputation. The closed networks, the islands, visible in the Figure 1.2 European healthcare organization are not entirely detrimental to the organization. The holes between islands allow for variation in knowledge and practice and the closed networks defining islands are production sites for the trust and reputation that make certain people eligible to broker knowledge and practice across the holes between islands. Introduced in Chapter 1, the criterion evidence for closure is that trust is facilitated and reputations preserved within closed networks. Argument and evidence on the governance provided by closed networks is available elsewhere (Burt, 2005:Chps. 3-4; 2010:Chp. 6; Rivera et al., 2010). I focus here on the trust and reputation that make certain people eligible to succeed as network brokers.

**Strong, Positive Relationships**

Figure 3.6 displays illustrative evidence of strong, positive relations more likely in closed networks. To begin, data for the graph to the left, Figure 3.6A, come from a network survey of the 543 HR managers in a large financial organization (Burt, 2010:80-85). The vertical axis is the probability that a manager cites a colleague for one of the three out of a corporatist country (Vasudeva et al., 2013:658-659). In other words, as illustrated for the bankers in Figure 3.3B, broker trustworthiness is critical for returns to brokerage.
kinds of relations in the graph. The horizontal axis is a count of third parties connecting manager and colleague. A third party is any other manager in the HR organization who is connected with both the citing manager and the colleague. For example, a third party could be a person that the manager and colleague both cite as someone with whom they socialize informally, or it could be a person they both cite as their boss, or it could be a person the manager cited as his boss and the colleague cited as a source of valuable career advice. There are many ways for manager and colleague to be connected through mutual contacts as third parties, but the mode is zero. Most managers have zero mutual contacts, that is, they are connected with completely different sets of colleagues. Connected managers and colleagues had 1 to 11 mutual contacts, with 1.36 mutuals the average.

The bold line in Figure 3.6A shows that the probability of trust is near zero when manager and colleague have no mutual contacts (specifically, it is .001). The probability increases to .17 when manager and colleague have three mutual contacts. The probability increases to .33 when there are six or more mutual contacts. In short, the probability of trust between two people increases with the number of mutual contacts closing the network around the two people (and the test statistic presented next to the bold line in the graph, 17.26, shows that the association is strong).  

But what does trust mean for the HR managers? Behaviorally, trust is deceptively clear: It is an act of trust to give you control over something of mine before I know what you are going to do with it. Marriage is an act of trust — she now has rights to your property and you do not know how life is going to unfold. Granting tenure is an act of

[^10]: Here is the data structure for the graph: There are 147,153 possible connections between pairs of the 543 HR managers (n[n-1]/2). Each pair of managers is a unit of analysis. Two managers are connected if the network survey revealed a strong connection from one to the other. I estimated a logit regression model predicting whether or not either manager in a pair cited the other for trust (as explained in the text using Figure 3.7). The three predictors in the model are number of third parties along with the number of people connected to each of the two managers whose trust is being predicted (ceteris paribus, a person with many contacts is more likely to be cited for trust by random chance). I used the “cluster” option in Stata to adjust test statistics down for autocorrelation between relations involving the same manager. The three test statistics reported in Figure 3.6A were obtained the same way, using the three different dependent variables indicated in the graph.
trust — he looks like a good bet now, but who knows what he will be like 20 years from now. Loaning my pen to the person sitting next to me is an act of trust — I assume the neighbor will return my pen in good order but what if he is a forgetful person who chews his pens? Going into surgery is an act of trust — your due diligence on the surgeon says she is reputable, but you do not know what her emotional state will be the day she works on you, nor whether she is familiar with the complication that is going to emerge in your particular procedure.

No practical research design can inventory interpersonal behavior to locate where trust exists in a management population. Standard methodology is to use name generators. For example, people could be asked “Who do you trust?” But the question does not ask about behavior. The question asks a respondent to name people he or she perceives to be trustworthy — a cognitive task more difficult than identifying acts of trust post hoc. For example, the acts of trust listed in the previous paragraph differ in the resources put at risk. Loaning a pen risks little. Surgery puts more at risk. People can mean different things when they name trusted contacts. One person means he would trust the cited contacts to lead a routine project. Another person limits trust to contacts who could lead a significant project. Still another means that he would be comfortable making a substantial personal loan to the contact.

One line of attack on the problem of interpreting complex relationships is to ask for specific kinds of relations in a study population (to make citations comparable across respondents, Fischer, 1982), then aggregate kinds perceived in the population to be similar (Burt, 1983, 2005:50-53). The exercise is illustrated in Figure 3.7 for the HR managers. The kinds of relations elicited are themselves abstract, but more concrete than “Who do you trust?” Figure 3.7 is a “cognitive map” describing how the average HR manager in the study organization makes distinctions between kinds of relations.\textsuperscript{11}

\begin{flushright}
\textsuperscript{11}The term “cognitive map” was introduced into psychology by Tolman (1948) to describe the consequential difference between a linear, “strip” mental image of a maze versus a two-dimensional image. The metaphor came into network analysis (e.g., Burt, 1983; Burt and Schott, 1985) through anthropology, where the metaphor guided discussion of how people in a study culture categorize (e.g., Romney and D’Andrade, 1964; Boster and Johnson, 1989).
\end{flushright}
The results in Figure 3.7 were used to identify trust relations for Figure 3.6A, and are a segue to more general evidence of the association between trust and closed networks.

The HR managers were asked to name colleagues they seek out for each of a dozen “name generators” (abbreviated to the right of the cognitive map in the order asked, and listed in full elsewhere, Burt, 2010:285-286), then asked a series of “name interpreters” to flesh out the cited relationships (Marsden, 2011, on survey network data; Burt, 2010:286-288, on the map in Figure 3.7). Kinds of relations are assigned to locations in the map based on a multidimensional scaling of the tendencies for kinds of relations to reach the same contacts. When the same people are cited for two kinds of relations, the two kinds are close together in the map (e.g., “essential support” and “most valued contact”). When different people are usually cited for two kinds of relations, the two kinds are located far apart in the map (e.g., “most difficult person” and “socialize”).

The cognitive map of relations in the HR organization varies on two dimensions: a negative-positive horizontal dimension, and a personal-corporate vertical dimension. The two dimensions are not uncommon (Burt, 2005:53). To the southeast in the map is a cluster of personal, positive interpersonal activities that jointly define a category of relationships that can be treated as “trust” in the HR organization (discuss job options, discuss important matters, socialize). If a manager cited a colleague for any of these three reasons, the connection between them is coded as a “trust” relationship, and the bold line in Figure 3.6A shows the association with closed networks.

——— Figure 3.7 About Here ———

It is a short step to thinking of all strong, positive relations on the right side of the map as variations on trust relationships. The three right-most name generators in the southeast, shaded area of the cognitive map are more obviously personal and related to trust. However, there are also elements of trust to the three right-most name generators in the northeast, corporate area of the map. These generators elicit the names of colleagues trusted to support a manager’s interests in the company: essential support, most valued contact, and representing one’s interests in a re-organization. As the connection with a person gets stronger — accumulating a history of experience, deeper
emotional attachment, more felt obligation to honor reciprocity — the probability of trust can be expected to go up.

Consistent with that logic, the probability of a strong, positive relationship between manager and colleague increases with closure around the two people. The thin solid line in Figure 3.6 shows the closure association with relationships in which any of the six right-most name generators in the cognitive map elicited a citation. Such relations are unlikely in the absence of mutual contacts (.002), likely between managers and colleagues who have three mutual contacts (.26), and very likely between managers and colleagues who have six or more mutual contacts (.56).

The advantage to thinking in terms of strong, positive relations as a generalization of trust is twofold: reliability and availability. With respect to reliability, trust is an abstract evaluation likely to be inconsistent across people. It is easier for people to identify the colleagues toward whom they feel especially close or with whom they feel collaborative. With respect to availability, it is routine to gather network data on emotional closeness, years known, and general evaluation of individual colleagues, so there is quite a bit of data available.

For example, Figure 3.6B displays evidence of closure using data obtained from annual peer evaluations among analysts and investment bankers in a large financial organization. The data come from four years of annual peer evaluations. Each year, employees eligible for bonus compensation go through a roster of colleagues, cite those with whom the employee had frequent and substantive business contact during the year, and rate each person for the quality of working with them. Divisions could use additional rating dimensions relevant to their business, but all included a summary evaluation: “outstanding,” “good,” “adequate” (negative evaluation akin to a grade of C in graduate school), or “poor” (persons receiving multiple poor evaluations were encouraged to look for a more compatible employer). Outstanding to poor are my synonyms for the words actually used in the evaluations. Evaluations receive numeric values of 4 to 1, respectively. The average evaluation of a person then goes to bonus and promotion personnel as a measure of the person’s reputation with colleagues. The graph in Figure 3.6B summarizes 46,231 colleague evaluations (see Burt, 2010:174, 181 for more detailed discussion of the graphs).
The graph shows closure evidence of both structural and relational embedding. The horizontal axis is structural embedding this year measured by number of mutual contacts. The dependent variable is whether the employee cites the colleague as good or outstanding next year. The bold line in the graph shows that the colleagues cited for strong, positive relationships next year are people with whom the employee has many mutual contacts this year. The association is strong (14.88 test statistic). In contrast, the thin line in Figure 3.6B shows no association with closure (0.81 test statistic). The thin line describes the probability of a strong, positive connection next year in a relationship that is at least two years old. These relations in their third year have grown sufficiently strong that structural embedding no longer matters. That is relational embedding. Employee and colleague have known one another long enough that they do not require the reassurance of mutual friends.

The summary point across the graphs is that trust relations — and strong positive relations more generally — are more likely between people around whom the network is closed.

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12 The test statistic was estimated as described in the preceding footnote using a logit regression equation predicting a strong, positive relationship next year from three predictors this year: number of mutual contacts, number of employee’s contacts, and number of colleague’s contacts. It is worth noting that the two graphs in Figure 3.6 are based on distinct risk sets often used in predicting where certain kinds of relations occur. The distinction is relevant to closure evidence in virtual worlds. Figure 3.6A is based on a risk set of potential relations. There are 543 HR managers in the study population. There are \( n(n-1)/2 \) possible connections between 543 people. So there are 147,153 potential relations that could be observed in the study population. Using a risk set of all possible relations produces linear, steep associations such as the ones for trust and strong positive in Figure 3.6A because relations tend to cluster (closure begetting strong, positive relations), which leaves many potential connections unrealized between people in separate clusters. Figure 3.6B is based on a realized risk set. The set of all relations observed this year are used to predict relations observed next year. The many possible relations not observed this year are not in the risk set for next year. Using a risk set of realized relations produces the nonlinear, flatter associations seen in Figure 3.6B because relations are predicted within clusters, which excludes relations between the many disconnected people in separate clusters. The large number of people in a popular virtual world, and the lack of a clear social boundary around the world (see the discussion of “tourists” in the next chapter) make the use of potential risk sets unwieldy and ambiguous. I use realized relations to define risk sets. The nonlinear, flatter associations in Figure 3.6B will be the appropriate point of comparison for closure-trust associations.
Stable Reputations

Figure 3.8 displays illustrative evidence of persistent reputations within closed networks. Reputation is measured by the average evaluation a banker received from colleagues. These are the averages used in Figure 3.2 to show how positive reputation increases with network status. The construct validity of the average evaluations as a measure of reputation was shown in Figure 3.3 and Figure 3.4 in that only the bankers with positive average evaluations are accepted as network brokers. Disaggregating down to pairs of bankers, the individual evaluations were used in Figure 3.6B to show how strong, positive relationships are more likely within closed networks. The data are now used to show how relations among colleagues evaluating a banker make consistent evaluation more likely over time.

Figure 3.8A shows that banker reputations are stable on average from year to year. This is important to governance via reputation. If a person behaves badly this year, it erodes his reputation among colleagues, and they know to avoid him next year. Knowing that will happen, the potential misbehaver has an incentive not to behave badly. But if bad behavior were quickly forgotten, colleagues next year would have no forewarning to avoid the misbehaving person, so there would be no reputation incentive for the misbehaver to behave well.

——— Figure 3.8 About Here ———

Figure 3.8B shows that the stability of an individual banker’s reputation depends on closure among the colleagues evaluating the banker. Bankers are arranged on the horizontal axis in order of mutual contacts closing the network around evaluators. To the left, illustrated by a sociogram below the horizontal axis, are bankers evaluated by colleagues who have no contact with one another. Banker and evaluators share no mutual contacts. To the right are bankers evaluated by densely connected colleagues. The vertical axis measures reputation stability (Burt, 2010:161-166). For each banker, the correlation between reputation this year and reputation next year (Figure 3.8A) is computed for the banker and the dozen colleagues adjacent to him on the horizontal axis, i.e., the dozen colleagues with networks most similar to the banker’s in closure. At the top of the vertical axis are bankers whose reputations are extremely stable. At the
bottom of the vertical axis are bankers whose reputations this year have no correlation with their reputations next year.

Although one can find differences in the targets of positive and negative gossip (Ellwardt, Labianca, and Wittek, 2012), Figure 3.8B shows that positive and negative reputations are strikingly similar in their dependence on network closure. The dark dots describe bankers with below-average evaluations this year. The white dots describe bankers with above-average evaluations this year. There is no statistically significant difference between the height of corresponding white and dark dots, which is to say that positive reputations are on average no more or less stable than negative reputations.

Closure is the key stability factor. Reputation is correlated .73 from year to year for bankers evaluated by colleagues in closed networks (upper-right corner in Figure 3.8B). At the other extreme, the reputations of bankers evaluated by disconnected colleagues show no stability. The year-to-year correlation is a negligible .09 (lower-left corner in Figure 3.8B). The association between reputation stability and network closure visible in Figure 3.8B is a robust effect in statistical analysis of the data (Burt, 2010:167), which supports Coleman’s (1988:S107–S108) intuition: “Reputation cannot arise in an open structure, and collective sanctions that would ensure trustworthiness cannot be applied.”

**Bandwidth versus Echo**

The data pattern in Figure 3.8B also illustrates an important feature of the social mechanism by which reputations emerge in closed networks. The significance of the pattern can be seen in sociograms showing a colleague about to evaluate a banker. In the sociogram to the right, colleague and banker are linked by positive indirect connections through mutual contacts. Colleague and banker share negative opinion of Emile and positive opinion of Marc. Marc is a source of positive stories about the banker and a more likely discussion partner than the disliked Emile. If the colleague and Emile find themselves in a conversation, Emile’s negative stories about the banker strengthen the colleague’s positive opinion of the banker (my enemy’s
enemy is my friend). The sociogram below illustrates negative indirect connections. The colleague thinks well of Catherine, who has a negative relation with the banker. Catherine is a likely discussion partner for the colleague and she will have stories to support her negative opinion of the banker. The colleague is less likely to gossip with disliked Philippe, but if a conversation occurs, and Philippe shares a story about his positive relationship with the banker, it will strengthen the colleague’s negative opinion of the banker (my enemy’s friend is my enemy). In short, (as predicted by balance theory, Heider, 1958; Cartwright and Harary, 1956), positive evaluations are expected to develop in relations embedded in positive indirect connections (Emile, Marc) and negative evaluations are expected in relations embedded in negative indirect connections (Philippe, Catherine).

But the banker relations are balanced in strength, not direction. The horizontal axis in Figure 3.8B describes connection through mutual contacts without distinguishing positive from negative connections. Negative and positive evaluations are both more likely in relationships embedded in positive or negative indirect connections (Burt, 2008). It is true that positive evaluations are more associated with positive indirect connections than with negative (Burt, 2010:175), but positive indirect connections also increase the likelihood of negative relationships (Burt, 2005:185), positive and negative indirect connections both protect against relation decay (Burt, 2010:175), and positive and negative indirect connections both stabilize reputations into next year (Burt, 2010:167). The cited works provide details, but I included one example in Figure 3.6. The graphs show that positive relations and trust relations are more likely between people who have many mutual contacts. In addition, however, the dashed line in Figure 3.6A shows that negative relations are also more likely between people who have many mutual contacts (negative contacts are the ones to the left in Figure 3.7). The point illustrated is that relations need not develop consistent in direction: It is not always true that the people you like are the people I like, even if we are close to one another. It is more accurate to say that relations develop consistent in intensity: the people about whom you have strong
sentiment are people about whom I have strong sentiment; we might not agree in the
direction of our sentiments, but the people we care about are often discussed so we
come to have opinion about them.

Explanation for balance in intensity more than direction requires digging past
network structure down to the information flowing through a network. Reputations
emerge from the flow of information about opinion and behavior. Information flow can
be non-reactive or reactive. Non-reactive refers to a network in which information flows
without distortion, like water flows through pipes in a plumbing system (Podolny’s, 2001,
“pipe” metaphor). The more closed the network, the more alternative channels through
which information can move, making it more likely that people are informed about one
another’s opinion and behavior. For example, eBay’s reputation system is a network of
buyers and sellers through which information on one another’s behavior is distributed.
Knowing bad behavior will be reported in a public way, buyers and sellers who wish to
continue in eBay have an incentive to behave well. The information on past behavior is
presented in the same way to anyone who looks it up. The information is not filtered
such that certain viewers see more positive or negative information. This image of
information moving through a network, non-reactive to channel, can be labeled a
“bandwidth” image of closed networks; more connections create wider bandwidth for
information flow. The more people who report their experience with an eBay seller, the
more confident you can be about the average evaluation of the seller, but the key
feature is non-reactivity to the viewer. The network is a non-reactive distribution
channel for evaluation; everyone sees the same information when he or she goes to the
screen displaying evaluations of the eBay seller.

In contrast, information flow is often reactive in social networks. The information
shared in a conversation is tailored to that conversation. We tell stories, share
information, consistent with the emotional tone of the conversation. Social skill,
emotional intelligence, etiquette, call it what you will; it is rude to share information out
of step with the emotional tone of a conversation. If everyone is excited about the
product about to be launched, it would be rude to bring up details about the serious bug
in the product software. When a friend is suffering in the emotional aftermath of a bad
relationship, we do not share positive stories about the friend’s former partner; we share
negative stories portraying the partner as a miserable creature from whom our friend is fortunate to be free. It would be rude to mention that you always liked her, highlight her virtues, or ask for her phone number. We support one another, strengthen friendship, by displaying similar orientation to surrounding people, objects, and events. More generally, this is how we build relationships. We display to one another our similar orientation to surrounding people, objects, and events to establish a comfortable, reassuring connection between us. In network terminology, this is strategic display of structural equivalence. The implication of the process is that closed networks are an echo chamber more than a neutral distribution system. We join conversations consistent with the way we feel and we hear echoed back the emotional tone of the conversation. We develop an unrealistic sense that our friends and colleagues share our opinions (e.g., Goel, Mason, and Watts, 2010), which makes us more convinced in our opinions. We become ignorantly certain — certain in our opinions, but ignorant of their location in broader context (Burt, 2005:178-181).

In sum, reputation emerges in two ways within closed networks. When relations are merely channels through which information flows, closure increases “bandwidth” within the network — more connections means more channels for talking about opinion and behavior. Such closed networks are common in online reputation systems (e.g., eBay.com, Amazon.com, Oyster.com, Hellopet.com, dontdatehimgirl.com). When relations are created and maintained by the information shared, as is typical in social networks, closure creates an "echo" within the network — more connections means more exposure to the filtered bits of information productive to share, which creates the intended sense of social solidarity within the network, but as a by-product reinforces current opinion, making people more rigidly certain in their views. The distinction between echo and bandwidth is of course a matter of degree. Contexts vary in the extent to which an etiquette filter applies, but social networks are typically more than a simple distribution system. Some degree of echo is to be expected in closed social networks. Detailed argument and evidence is available elsewhere (Burt and Knez, 1995; Burt, 2005:Chp.4, 2010:Chp. 6).
Three Implications of Echo

The echo likely within closed social networks has three implications. First, I do not have to worry in the forthcoming analyses about predicting from the balance of sentiments in a relationship so much as connection strength. This is valuable because connection strength can be measured with network data less precise, and so more reliable, than the data required to measure the balance of sentiment in a relationship. I cannot predict from ego’s sentiment toward a contact which bits of information will flow through their connection. What flows will depend on context. But the likelihood of flow increases with connection strength, and that is what predicts trust and reputation. The indirect connections predicting strong, positive relationships in Figure 3.6 do not depend on people sharing similarly positive or negative evaluations of mutual contacts, only the strength of their connection through third parties. The indirect connections predicting reputation stability in Figure 3.8 do not depend on colleague and banker sharing similar evaluations of third parties, only the strength of their connection through third parties.

Second, I expect a person’s reputation to vary across groups, the social clusters illustrated in the Figure 1.2 healthcare organization. The reason for my expectation is that echo shifts reputation ownership from ego to her contacts. When a closed network provides only bandwidth, ego owns her reputation. The network is merely a distribution system ensuring that colleagues are informed about ego’s opinion and behavior. If ego behaves well in eBay, for example, potential partners will see stories about ego’s good behavior posted by the people she treats well. Echo shifts ownership to the people who talk about ego. Reputation is only valuable if it persists to facilitate entry into new opportunities, so reputation as a valuable asset is owned by whom ever ensures that reputation persists over time. The results in the lower-left corner of Figure 3.8B show that reputations do not persist in open networks. Reputation stability increases quickly up through a handful of mutual contacts, then increases at a slower rate with additional mutual contacts. Reputation stability is anchored in clusters of about five or more colleagues reinforcing one another’s opinion. If people talking about ego were primarily concerned with exchanging information to accurately summarize ego, then the bandwidth and echo images of closed networks would predict the same final reputation. However, echo is created by people sharing stories selected to build and maintain
relations with one another. Since interests are likely to differ between groups, the ego stories selected to exchange are likely to differ between groups. In closed networks containing people brought together by positive stories about ego, positive ego-stories circulate so ego acquires a positive reputation. In closed networks containing people brought together by negative stories about ego, negative ego stories circulate so ego acquires a negative reputation. Table 3.1 lists implications of echo for managing reputation: reputation depends on circulating stories about ego, stories selected because they bring discussants together, so ego’s reputation is owned by the people circulating the stories, reputation emerges from ego’s behavior on projects likely to be talked about, and ego has as many reputations as there are closed networks in which she are discussed. The key point here is that each group within which ego is discussed is another site for ego reputation production. People in different groups might agree on what is interesting to discuss about ego, whereupon it makes sense to average evaluations of ego across groups. When groups differ in interests so ego’s reputation differs between groups, averaging across groups can create a regression to the mean in which people appear to have reputations more similar than their reputations actually are within groups. As an upper limit, ego can have as many reputations as there are closed networks in which he is discussed.

——— Table 3.1 About Here ———

Echo’s third implication for this book is that I do not have to give special treatment to network brokers when estimating associations between closure, trust, and reputation. Brokers are by definition not members of closed networks, so they are at risk of being seen as suspect outsiders — foreigners outside the keiretsu, goyim outside the community. Where reputation is based on echo, however, ego’s reputation is sustained by gossip about ego, with or without direct contact to ego. Given ego soliciting trust from alter, or alter deciding whether to trust alter, the closure that facilitates trust is not between ego and alter, it is closure around alter, creating echo that solidifies alter’s opinion of ego. Closure around alter can maintain the reputation of a colleague within the same network, or a broker beyond the network. Thus, closure can maintain the reputations of network brokers just as it maintains the reputations of people in closed networks. More, we know that trusted relationships are more effective as bridges
Examples are Uzzi (1996) on garment manufacturers less likely to go bankrupt if they concentrate their business in a few suppliers, Reagans and McEvily (2003) on strong bridges facilitating knowledge transfer, Centola and Macy (2007) on complex ideas more likely to diffuse through “wide” bridges, Tortoriello and Krackhardt (2010) on innovation associated with strong bridges, termed “Simmelian ties,” and Sosa (2011) on creativity associated with strong rather than weak bridges.

To illustrate this third implication, I re-calculated the reputation-stability results in Figure 3.8 for two categories of bankers: those who are network brokers versus others. Network brokers are distinguished for the illustration as anyone with below-median network constraint this year (predicting reputation stability into next year). Reputation stability on the vertical axis in Figure 3.9 is the same as in Figure 3.8B.

The horizontal axis in Figure 3.9 distinguishes bankers by the average number of mutual contacts between people who evaluate the banker. Mutual contacts are third parties closing the network around evaluators, making an evaluator more certain in his or her opinion of a banker. Consider the sociogram to the right under the horizontal axis. Two colleagues evaluate a banker. Each colleague in turn is evaluated by three other colleagues. The count of third parties as defined in Figure 3.8B is zero; there are no third parties connecting the banker with either evaluator. But the two evaluators themselves are embedded in relatively closed networks. Average numbers of third parties embedding an evaluator’s relations are rounded in Figure 3.9 to the nearest lower integer (e.g., an average of 2.43 third-party connections would be over the “2” on the horizontal axis), but the regression equations in the graph are estimated from continuous scores (routine t-tests are adjusted down for repeated observations using the “cluster” option in Stata).

Figure 3.9 shows that the reputation stability associated with closure is true for brokers as well as for people in closed networks. In fact, broker reputations are slightly more stable and broker contacts are slightly more embedded in closed networks. The
greater stability is apparent in the graph from the higher regression line for brokers.\textsuperscript{13} The deeper embedding is hinted at in the graph by the lack of brokers with any contacts embedded in less than two third parties on average (broker regression line begins at two third parties). Specifically, the people evaluating broker bankers are embedded in 7.6 third parties versus 6.6 for non-broker bankers (8.0 t-test). The deeper embedding around broker contacts can seem counter-intuitive since brokers by definition have greater access to structural holes, but Figure 3.9 is not about the broker’s network; it is about the networks around a broker’s contacts. The deeper embedding indicates that brokers are connected to colleagues in closed networks, and the stability results in Figure 3.9 show that the closed networks around broker contacts are associated with stable broker reputations (like fan groups for celebrities).

CONCLUSIONS

This chapter has been an introduction to the governance provided by closed networks. The argument is that dense communication channels in a closed network make it more likely that behavior and opinion inconsistent with standards in the network will be detected and discussed. With detection and discussion more likely, reputations emerge and bad behavior is less likely within the network, which lowers the risk of trust, thereby increasing the probability of trust. Information transmission defines a distinction between two mechanisms by which closure creates trust and reputation. Information can be reactive or non-reactive to the channels through which it moves. When information is non-reactive, closure creates “bandwidth” – more connections mean better access to information. The many online rating systems are examples. Everyone sees the same evaluations. Trust and reputation emerge from people better informed. On the other hand, when information is reactive to the connected people sharing it,

\textsuperscript{13}To put the point in perspective, regress the subsample stability correlation for a banker (vertical axis is Figure 3.6B) across log third parties, a dummy variable distinguishing broker bankers, and an interaction term between the broker dummy and the log third parties. With routine t-tests adjusted down for repeated observations, the respective t-tests for the three predictors are 15.11, 5.81, and -3.02. Stability is most strongly associated with closure, but it is also significantly higher for brokers.
Closure creates echo – more connections mean more exposure to a biased sample of information. Stories consistent with ongoing emotional tone and shared perspectives are shared more often than stories contradictory to ongoing conversation, so trust and reputation emerge distorted to fit prevailing emotion and perspective. The distinction between bandwidth and echo has implications for managing reputation (Table 3.1), but by either mechanism, the summary closure principle is that trust and reputation are associated with closed networks. Illustrative evidence includes strong, positive relations more likely in closed networks (Figure 3.6), and reputations more stable in closed networks (Figures 3.8 and 3.9). In fact, the illustrative banker reputations dissolve in the absence of closure: reputation this year in an open network has no correlation with reputation next year (Figure 3.8).

Trust and reputation are a fundamental link between brokerage and closure. The achievements associated with brokerage require the trust and reputation associated with closure. Would-be brokers need to be accepted as brokers by the people between whom, or to whom, connection is to be brokered. Is the would-be broker competent, trustworthy, and appropriate as a source of news to a person like me? The would-be broker’s job rank and network status are two visible signals relevant to these concerns. Job rank indicates social standing in the formal organization, and returns to brokerage are higher for people holding more senior jobs (Figure 2.7 in previous chapter). Network status indicates social standing in the informal organization, and returns to brokerage are higher for people with higher discussion-network status (Figure 3.1). However, reputation alone is sufficient: Regardless of status, bankers with positive reputation show the advantage of access to structural holes, and bankers with below-average reputations show no advantage from the same access (Figures 3.3 and 3.4).

Contingent returns to brokerage create unobtrusive organization diagnostics for evidence-based management. Given returns to brokerage contingent on trust and reputation, categories of people not trusted in an organization can be identified by looking for places where rewards are not enhanced by brokerage. I discuss three examples: a merger in which people from the legacy acquired firm were distrusted as brokers, a division in which the senior person stunted the development of new leaders by rewarding for loyalty rather than brokerage, and a firm in which women and young
men who tried to be brokers were denied promotion (Figure 3.5). Reputation is key to opening senior positions to the best of emerging talent. Job rank and network status allow already-established people to benefit from access to structural holes. Reputation greatly widens the pool of people eligible to benefit, typically widening the pool by including talent lower in the status hierarchy (Figure 3.4).

Brokerage contingent on closure can seem a contradiction. Brokerage by definition involves links across closed networks, so how do brokers find the trust and reputation necessary for successful brokerage? The ostensible contradiction is resolved by distinguishing how reputation emerges within closed networks. Reputation is maintained, and therefore owned, by a broker’s audience, not the broker. A network broker is by definition not embedded in a closed network with the people between whom she brokers connections, but she does have connections into closed networks within which her reputation is built and maintained. Reputation does not require closure between broker and contacts. It requires only that some of a broker’s contacts are in closed networks (Figure 3.9).

REFERENCES


Returns to Brokerage Contingent on Network Status

Compensation and network constraint scores are averaged within five-point intervals of constraint. Correlations are for averages in the graph. "High" status is above median. Figure adapted from Burt and Merluzzi (2013:Figure 2).
Figure 3.2
High Status Is a Good Signal of Positive Reputation, but Low Status Is an Ambiguous Signal

Graph A plots investment banker reputation by levels of network status. Reputation is measured by average colleague evaluation. Boxes span 25% to 75% with bold horizontal at the mean. Whiskers extend down to minimum reputation, up to maximum.
Figure 3.3
Reputation Is Critical to Successful Brokerage

Graph A plots banker compensation from colleague discussion network. For the graph, dependent variable is averaged within intervals of network constraint, but the test statistic is for all 469 observations, holding constant job rank, peer evaluation, years with the organization, minority, and working in US headquarters (Burt, 2010:91-93). Graph B is the same result, but with separate predictions for bankers with above-average reputations (solid squares) versus bankers with below-average reputations (hollow squares) and network status is added to each prediction as a control for a banker’s social standing across all senior people in the bank.
Figure 3.4
Reputation Makes Eligible a Broader Population of Would-Be Brokers

Horizontal axis ranks banker observations from highest status (hollow dots) or most-positive reputation (solid dots) to the opposite extreme. Vertical axis is the correlation between compensation and log network constraint for a sample of 48 observations adjacent to each banker (24 of higher social standing plus 24 of lower social standing). Displayed data are smoothed by averaging across 24 adjacent observations.
Figure 3.5
Diagnostic Contingency in Three Organizations

A. Leader Development

All But One Division of Firm
$r = -0.36, t = -5.66, P < .001$

The One Other Division
$r = 0.09, t = 1.05, P = .30$

B. Merger & Acquisition

Acquiring Management
$r = -0.40, t = -4.92, P < .001$

Acquired Management
$r = 0.11, t = 1.06, P = .29$

C. Diversity

Women and Junior Men
$r = 0.30, t = 3.38, P < .01$

Senior Men
$r = -0.40, t = -5.56, P < .001$

Network Constraint
Early Promotion (in years)
Figure 3.6

Strong, Positive Relationships Are More Likely in Closed Networks

Graph A describes 147,153 observed and potential relations between 543 HR managers in a large financial organization. The positive, negative, and trust kinds of relations are discussed in the text. Graph B 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. Z-score test statistics in both graphs are estimated with controls for differences in network size and adjusted for autocorrelation between relationships (Stata "cluster" option).
Figure 3.7
Spatial Map of Kinds of Management Relations

Based on a network survey of the leaders in a large HR organization, this is a multidimensional scaling of tendencies for different kinds of relations to occur together (Burt, 2010:287; cf., Burt 2005:52). The cross-hair marks the (0,0) point in the multidimensional scaling. Name generators are indicated by solid dots (and listed to the right in their order of appearance in the network survey). Others dots refer to name interpreter responses.
Graph A plots analyst and banker reputations this year versus next. Squares are analysts ($r = .55, t = 9.78$), and circles are bankers ($r = .61, t = 13.16$). Graph B describes for the bankers subsample correlations between positive (above average) and negative (below average) reputations this year and next year. Adapted from Burt (2010:162, 166).
Figure 3.9
Essential Closure Is Around Contacts, Maintaining the Reputations of Brokers and People in Closed Networks

Vertical axis is same as in Figure 3.8B. Horizontal axis is average number of third party connections in the networks around banker’s contacts (rounded to nearest whole number). Brokers are bankers with below-median network constraint this year. Regression lines in graph go through averages. Regression equations estimated from 894 year-to-year banker transitions. Test statistics are adjusted down for correlation between repeated observations of the same bankers using the "cluster" option in Stata.
### Table 3.1
Reputation Implications of Bandwidth Versus Echo

<table>
<thead>
<tr>
<th>Reputation Questions</th>
<th>Closure Creates Bandwidth (information non-reactive to channel)</th>
<th>Closure Creates Echo (information reactive to channel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. What makes ego’s reputation persist?</td>
<td>Ego’s consistent behavior, on which others are informed. Wide bandwidth in a closed network enhances information distribution and consistency.</td>
<td>Consistent stories circulating about ego’s behavior. The echo produced by etiquette enhances story distribution and consistency in a closed network.</td>
</tr>
<tr>
<td>2. Therefore, who owns ego’s reputation?</td>
<td>Ego does. It is defined directly and indirectly by ego’s behavior.</td>
<td>They do. It is defined by people gossiping about ego. Reputation quickly decays in open networks.</td>
</tr>
<tr>
<td>3. What implications for building reputation?</td>
<td>Behave well and get the word out.</td>
<td>Put a premium on projects likely to be talked about.</td>
</tr>
<tr>
<td>4. How many reputations does ego have?</td>
<td>One, defined by ego’s behavior. Variation can exist from imperfect information distribution or conflicting interests, but variation is resolved by finding the true, authentic person inside ego.</td>
<td>Multiple, depending on gossip. Ego has as many reputations as there are groups in which ego is discussed. The reputations can be similar, but they are generated and maintained separately.</td>
</tr>
</tbody>
</table>