Reputation and Status as Contingency Factors

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Reputation and Status as Contingency Factors

This paper is about reputation as a contingency factor, akin to network status, in the achievement associated with structural holes. On average, achievement is higher in networks that provide more opportunities to broker connections across structural holes. Individual achievement, however, is contingent on people accepting a would-be network broker as the source of a new idea or practice. The formal authority of high job rank is a well-known contingency factor. People in senior ranks are more easily accepted as a source of something new, and so enjoy higher returns to network advantage. More generally, network status operates as a contingency factor, familiar as Merton’s “Matthew Effect” in which prominent people receive disproportionate credit for valuable ideas or practice. Reputation is discussed here as a contingency factor similar in function to network status. Three virtues follow: (1) Research is more replicable when reputation is studied for what it does rather than what it is. (2) Relative to status, reputation is a contingency factor less exclusive and rooted in the past. (3) Network advantage denied for want of positive reputation provides an unobtrusive diagnostic with which difficult people problems in an organization can be addressed in a rigorous, analytical way. I begin with a baseline on status and returns to network advantage, then turn to contingency and reputation.

BASELINE: STATUS AND NETWORK ADVANTAGE

The gist of the structural-hole network-advantage story is that information becomes homogeneous, tacit, and therefore sticky within clusters of densely connected people such that clusters disconnect, buffered from one another by structural holes between them, which gives information breadth, timing, and arbitrage advantages to people whose networks span the structural holes. Two people who have no connection with
one another are more likely than connected people to work with different ideas and practices. The more disconnected the contacts in a network, the more likely the network spans structural holes. People who connect across the holes (call those people network brokers, connectors, hubs, or entrepreneurs) are exposed to the diversity of surrounding opinion and behavior so they are more likely to detect productive new combinations of previously segregated information, and more likely to see alternative sets of people whose interests would be served if the new combination were brought to fruition. Thus, a structural hole is a potentially valuable context for action, brokerage is the action of coordinating across the hole with bridge connections between people on opposite sides of the hole, and network entrepreneurs, or more simply, brokers, are the people who build the bridges.

Achievement and Structural Holes
Network brokers are rewarded socially and materially for their work decoding and encoding information. Numerous research projects show that people with access to structural holes are paid more than peers, receive more positive evaluations and recognition, and get promoted more quickly to senior positions (see Burt 2005; Burt, Kilduff and Tasselli 2013, for review and contingencies; Aral and Van Alstyne 2011, for a particularly important analysis of network structure as a proxy for information in predicting achievement; Aral and David, 2012, for replication; Rodan and Galunic, 2004, for a similar hypothesis tested with survey data).

Illustrating the fact that network brokers have an advantage in detecting and developing opportunities, Figure 1A is taken from an analysis of the social origins of good ideas (Burt, 2004). The population is supply-chain managers in a large electronics company. Managers were asked to describe their best idea for improving the value of the company’s supply chain organization. Two senior executives evaluated the merit of each idea. Average evaluations vary up the vertical axis in Figure 1A. A network survey was conducted to define the discussion network around each manager, from which a network constraint score was computed to distinguish managers in large, open networks (to the left in Figure 2) from managers in small, closed networks (to the right in
Figure 2). The graph shows a strong negative, nonlinear association in which brokers are likely to have their ideas evaluated as good and worth pursuing, in contrast to managers in closed networks who are likely to have their ideas dismissed.\(^1\) Figure 1A is attractive for displaying a continuous quantitative association between a person’s access to structural holes and the acknowledged value of their ideas. More depth to the association is available from ethnographic network studies of creativity (Obstfeld, 2005; Lingo and O’Mahony, 2010; Leonardi and Bailey, 2011) and more authoritative evidence is available from network analyses of archives (Uzzi and Spiro, 2005; Fleming, Mingo, and Chen, 2007; Fleming and Waguespack, 2007; Phillips, 2011).

The data in Figure 1B illustrate the fact that network brokers are compensated for their work decoding and encoding information between clusters. The graph shows a strong negative, nonlinear association with network constraint similar to the network association with idea quality. Discussed in detail elsewhere (Burt, 2010:26), Figure 1B contains stock analysts, investment bankers, and managers from diverse functions in Asia, Europe, and North America. The vertical axis is adjusted for controls within each management population so zero is performance typical for a manager’s peers, with respect to which an individual manager can be performing higher (positive z-scores) or lower (negative z-scores). For the investment bankers, performance is measured by bonus compensation. For the stock analysts, performance is measured by industry recognition with election to the Institutional Investor’s All America Research Team. For the managers, performance is measured by compensation, annual evaluations, or early promotion to higher job rank. The graph shows a network brokers paid more than their

\(^1\)Constraint measures the extent to which ego’s network is concentrated in a single group (Burt 1992:54-65; 2010:294-297). Begin with a measure of the extent to which ego i’s relations all connect back to contact j: \(c_{ij} = (p_{ij} + \sum_{q \neq i,j} p_{iq}p_{qj})^2\), q \(\neq i,j\), where \(p_{ij}\) is the proportion of ego i’s network time and energy spent directly with contact j, so contact-specific constraint \(c_{ij}\) varies from zero to one with the extent to which ego cannot avoid contact k, either directly \((p_{ij})\) or indirectly \((\sum_{q \neq i,j} p_{iq}p_{qj})\). Network constraint is the sum of the \(c_{ij}\) for each of ego’s contacts. The sum is an index that varies from zero to one — for all but very small networks — with the extent to which ego’s network time and energy is concentrated in a single group indicating that ego has no access to structural holes. Constraint scores in this paper were obtained with NetDraw (Borgatti, 2002), with two adjustments: Constraint is infinity for social isolates (divide by zero contacts) and can exceed one in maximum-density networks of two contacts. Since such networks provide no access to structural holes, I round their constraint scores to one. I multiply scores by 100 to discuss integer points of constraint in the text.
peers, receiving more positive evaluations and recognition than their peers, and getting promoted more quickly than peers.

**Status and Access to Structural holes**

Network brokers tend to be the recognized leaders in a population. The essence of leadership is coordinating others. The leadership can involve many or few people. It can be with respect to deep or shallow issues. It can derive from authority, energy, charisma, or something else. It can serve diverse ends, from improving economic performance to infusing work with meaning. Whatever its volume, depth, source, or purpose, leadership is about coordination. A structural hole is an opportunity to coordinate across the hole, so every hole to which a person has access is an opportunity to exercise leadership, and Figure 2A shows that people designated leaders by job rank have more access to structural holes.

**Leaders in the Formal Organization**

The data in Figure 2A describe twelve hundred senior people in four organizations: 346 investment bankers across the world, 117 commercial bankers in the United Kingdom, 331 Asia-Pacific sales and regional managers in a software company, and 454 American supply chain managers in an electronics company. Network data on the investment bankers are from annual 360 evaluations, from which network constraint is computed, and network brokers are the bankers to the left in the graph (Burt, 2010:Chp. 4). Constraint is low to the extent that a banker has frequent and substantive business contact with many colleagues who rarely contact one another. Network data for the other three populations were obtained with a network survey (Burt, 2010:Chp. 3, Appendix A). Constraint is low to the extent that a manager has strong work discussion relations with many colleagues who have weak relations with one another. The histograms in Figure 2A describe the distribution of network constraint in three broad job ranks. The “most senior job ranks” contain people who report to the CEO or report to someone who reports to the CEO. People in the next-lower two or three job ranks comprise the middle histogram in Figure 2A. People in lower job ranks comprise the bottom histogram.
The figure shows the distribution of network constraint shifting from more to less closed networks up the top job ranks. The shift is not absolute. There is substantial variation within the three job-rank categories and substantial overlap between the separate categories. However, the center of gravity in the distributions moves from more to less closed networks. In lowest category of job ranks, the average level of network constraint is 56.4 and the right-end of the distribution is thick with people in closed networks. Closed networks are less common in the middle job-rank category, and average network constraint is a lower 41.9 (-14.21 t-test, P < .001). Continuing up to the people in the most senior job ranks, only 6% are beyond 60 points of network constraint, average constraint decreases to 29.5 (-6.48 t-test, P < .001), and the center of gravity in the distribution shifts down to a modal constraint of 15 points (highest bar in top histogram). In short, network brokers are more common in higher job ranks.2

Leaders in the Informal Organization

Leaders in the formal organization are easily recognized by their job titles. However, Figure 2A shows considerable network variation between people in the same rank: people with similar titles can differ widely in the extent to which they coordinate others. Speaking more colloquially, people at the same job rank often differ in the extent to which they hold the emotional territory around their work. Some are widely known and respected. Some are just tolerated. Such differences refer to social standing in the informal organization.

It is sufficient for this discussion to show in Figure 2 that job rank and network advantage are correlated, but the familiar correlation is far from understood. In particular, does network advantage develop because a person holds senior rank or are people recruited to senior ranks because they have network advantage? Kleinbaum and Stuart (2014) offer a clever research design to better understand the correlation. They study email network data over time to determine the extent to which people promoted to positions on corporate staff have more access to structural holes before or after promotion. If before, then people with network advantage are being recruited to corporate staff. If after, then holding a position on corporate staff facilitates the development of a network rich in access to structural holes. They find a little of both, but a key finding is that the increased access to structural holes associated with positions on corporate staff does not decrease when people leave corporate staff. In other words, staff positions have a ratchet effect — employees with network advantage are more likely to be promoted to corporate staff, network advantage increases for employees in staff positions, and employees take the increase with them to subsequent jobs. As email network data become more available, applications of the Kleinbaum and Stuart research design should yield a deeper understanding the of associations between job rank, status, and network advantage (see footnote 5).
Figure 2B shows that people with more access to structural holes tend to be higher in the informal organization. Network constraint is measured on the horizontal axis, network brokers to the left and closed networks to the right. Social standing in the informal organization is measured on the vertical axis by network status. In the early years of social network analysis, social standing was measured by choice status (Moreno, 1934:102; Jennings, 1937, 1943). A person has high choice status to the extent that the person is widely cited as a preferred contact — indicating ego’s popularity and likely social influence. Choice status evolved into more sophisticated concepts of network centrality in which choices were weighted by the social standing of the source, a condition ultimately captured by the left-hand eigenvector of a network: The more ego is cited by people who are themselves widely cited, the higher ego’s status in the network. Eigenvector models were used extensively in the 1970s and 1980s to measure centrality and power within elite networks (e.g., Mizruchi, Mariolis, Schwartz, and Mintz, 1986). Podolny (1993) renovated use of the measure with a new interpretation: the eigenvector measures status, which is valuable as a signal of quality. When quality is difficult to determine, network status can be used as a visible signal of quality: A person or organization widely sought out by experts, who themselves are widely sought out, must be of high quality. When in doubt, look for the expert to whom experts turn. Whatever the interpretation, the eigenvector for a network measures the extent to which an individual is the object of strong relations with many colleagues who themselves have strong relations with many others. In Figure 2B, I have computed each person’s network status within work discussion relations, using the average person for a comparison point. Status scores are multiples of the average, fractions for

\[ s_i = \sum_j z_{ji} s_j. \]

When the \( z_{ji} \) are normalized to sum to one in each row, the maximum eigenvalue is one and the \( s_i \) are elements in the first eigenvector of the network. Status scores are computed numerically. With status on both sides of the equation, there is no absolute value of status; it has to be defined with respect to a numeraire. Popular options are to divide by the highest score (so each person is a fraction of the maximum), or the sum of scores (so each person’s score is a proportion of the total). I use average status as the numeraire, so status scores are multiples of average status. Eigenvector scores in this paper were obtained with NetDraw (Borgatti, 2002).

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3Bonacich (1972) provides a succinct summary of the eigenvector model. Given a network of relations \( z_{ji} \), where \( z_{ji} \) is the strength of connection from person \( j \) to person \( i \), the status of person \( i \) is high to the extent that \( i \) has strong connections from persons \( j \), who themselves have high status: \( s_i = \sum_j z_{ji} s_j. \) When the \( z_{ji} \) are normalized to sum to one in each row, the maximum eigenvalue is one and the \( s_i \) are elements in the first eigenvector of the network. Status scores are computed numerically. With status on both sides of the equation, there is no absolute value of status; it has to be defined with respect to a numeraire. Popular options are to divide by the highest score (so each person is a fraction of the maximum), or the sum of scores (so each person’s score is a proportion of the total). I use average status as the numeraire, so status scores are multiples of average status. Eigenvector scores in this paper were obtained with NetDraw (Borgatti, 2002).
people with status below average, 1.0 for people of average status, 2.0 for people of status twice the average, and so on. The graph in Figure 2B shows the highest levels of status concentrated to the left in the graph, over network brokers. Moving from left to right, across people increasingly constrained by their network, status rapidly decreases to below-average at the right in the graph, over the closed networks.

STATUS AS A CONTINGENCY FACTOR

Brokerage involves an audience, a set of people who have to accept the broker as a source of information, a purveyor of good ideas. Certain questions are to be expected from the audience: Is the broker known for competence in the proposed idea? Will he look after my interests if complications arise after accepting his proposal? How will it look to my colleagues if I accept a proposal from the would-be broker? Is the would-be broker an appropriate source of actionable information for a person like me? These are questions about trust, reputation, and social propriety. When a population association between achievement and structural holes is substantially stronger for brokers with certain characteristics, those characteristics are contingency factors.

Job Rank as a Signal
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. 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.

Contingency on job rank is illustrated in Table 1. Discussion networks around supply-chain managers in a large electronics firm were obtained by survey, from which annual salary is predicted. Results in Table 1 are taken from a larger model in the published analysis (Burt, 2004:371). Five job ranks are distinguished: executives, senior managers, and three lower levels of managers. With level-three salary as a reference, average salary is $35,707 lower for level-one managers, and $61,930 higher for people in the executive rank. Access to structural holes has no advantage for
managers in the first two ranks: Among level-one managers, there is a negligible $1 average drop in salary for a one-point increase in network constraint. Among level-two managers, there is a larger, but still negligible, $47 average drop in salary for a one-point increase in network constraint. Advantage begins with level-three managers and increases to a maximum for executives: a one-point increase in network constraint on executives is associated with a $697 decrease in annual salary. An executive who operated as a social isolate could expect to earn a salary less than the average level-three manager ($69,700 expected drop in salary wipes out $61,930 average difference between executive and level-three salaries).

Table 1 About Here

Job-rank contingency has either of two interpretations: production capability, or social acceptance. With respect to production, people in more senior positions do more political, less routine, kind of work that requires understanding and coordinating the interests of others (Burt, 1997; 2005: 156-162). Senior rank also carries bureaucratic authority. The boss might not be competent or trustworthy, but he is certainly culpable and in charge. “The boss asked me to . . .” is a perfectly adequate explanation to colleagues for your acceptance of the boss as broker. Together, authority and less routine work mean that brokerage can be expected to yield higher returns for people in more senior job ranks — as illustrated in Table 1.

Network Status as a Signal

Network status is a contingency factor for brokerage in the same way that job rank is a contingency factor. Recall the interpretation of network status as a signal of quality (introduced in the discussion of Figure 2B). 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 embedding a structural hole, network status indicates high social standing in the informal organization in which a structural hole is embedded. 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) and should be associated with higher returns to access.\(^4\)

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 (Burt, 2004), and it follows that network status eliciting more careful attention to broker good ideas is a contingency factor for brokerage.\(^5\)

\(^4\)It will become clear 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), then recently Rider (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), anticipating the strong status-broker associations displayed in this chapter. 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.

\(^5\)I reason from the perspective of an audience reacting to a broker. One could instead 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 (2013) 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. The more
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 higher status funds. At the other extreme, Zuckerman et al. (2003) show that low-status people are more successful when they are not brokers. Using data from the Internet Move Database on English-language films, the diversity of movie genres in which a person acted in 1992-1994 is used 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 About Here ———

Figure 3 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. 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 usual strategy 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; see Burt, Kilduff, and Tasselli, 2013, for review). 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), means that personality-induced correlation between status and access to holes cannot explain the contingent returns to network advantage illustrated here in Figure 3 and Figure 4.
status hierarchy, access to structural holes has no association with compensation (-.03 and -1.07 correlations).  

**REPUTATION AS A CONTINGENCY FACTOR**

Job rank and network status are exclusive, conservative contingency factors. Only a fraction of management can occupy the top job ranks and people in those job ranks tend to have high network status (Figure 2). Conceptually, 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, 2013). If the people offering a service all have the same network status, then status loses its value as a signal of superior quality, and audiences can be expected to search for new distinctions perceived to once again 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 shows that people below average in status are completely denied the benefits associated with access to structural holes. If benefits depend on high status, then people with less 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.

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6 Figure 3 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 (footnote 3), and an interaction term between log network constraint and high versus low status (divided at the median as in Figure 3). 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 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). See footnote 10 for similar results on a population of bankers.
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 3), 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).

Regardless of similarities and differences in what they are, the two concepts function similarly as contingency factors for brokerage, which is to say, they 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. 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

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7Barron 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 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).
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.”

**Replicable Results**

There are three virtues to bypassing the complexity of defining reputation in terms of what it is to instead define it in terms of what it does. One 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 the achievements associated with structural holes.

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8The 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 settle for such generalized information when nothing better is available, but ordinarily we seek better information. Better than the statement that someone is known to be reliable is information from a trusted informant that he has dealt with that individual and found him so.” . . . (People) “are less interested in general reputations than in whether a particular other may be expected to deal honestly with them — mainly a function of whether they or their own contacts have had satisfactory past dealings with the other.” General reputation seems to me adequate for arguing in this paper that reputation and status function similarly as contingency factors for brokerage, but closer analysis is likely to reveal that the contingency reputation provides is strongest for audiences embedded in closed networks (see Burt, 2005: 198; 2010: 163-165, on reputation persistence within closed networks).
Contingency focuses on the good-bad dimension to reputation. 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. Classic evidence of good-bad primacy comes from Osgood, Suci, and Tannenbaum’s (1957) factor analyses of semantic-differential data from diverse populations. 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 (e.g., Burt, 2010:287). 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 below in Figure 4 to distinguish bankers with positive reputations among colleagues. 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, and this impression will be confirmed in subsequent studies to be reported."

**Broader Population of Eligible Brokers**

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 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, then access to structural holes is an advantage available to reputable people beyond those already established with high status.

The key question is whether reputation is sufficient for a person to be accepted as a broker. I can answer “yes” for at least one population in which I have status and reputation data. Figure 4 displays reputation, status, and performance for senior investment bankers in a large financial organization. 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 3, with relationship $z_{ij}$ here equal to one if colleague $j$ evaluated banker $i$, zero otherwise).

The first of two points illustrated in Figure 4 is that the association between status and reputation is discernable, but loose. The graph to the left in the figure is a box-and-whisker plot of reputation scores on the vertical axis across increasing banker status on the horizontal. Average reputation increases with status (.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. Figure 4 shows that low-status bankers vary widely in reputation, from the very worst reputations in the graph, 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. In Figure 4, minimum reputation becomes more positive 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).

The second point illustrated in Figure 2 is that reputation, regardless of status, is sufficient to facilitate brokerage. The graph in Figure 4B is constructed like the graphs in Figure 1B, except instead of separating people into high versus low status, bankers are separated into high versus low reputation. A banker’s reputation is “low” if he is in the bottom half of reputation scores. Described by the dashed regression line through hollow dots in Figure 4B, 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 in the graph. These are bankers in the top half of reputation scores. For positive-reputation bankers, the bold regression line in Figure 4B shows compensation increasing sharply with more access to structural holes, and reaches especially low levels for those who have no access (-.53 regression coefficient predicting z-score compensation from log network constraint, t = -2.68, P < .01). In other words, would-be brokers do not need to hold a high-status position to enjoy the benefits of access to structural holes; it 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 and Figure 4 show that people with status or reputation in the top half of the population enjoy the benefits of network advantage, but Figure 5 captures 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

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9 The regression lines displayed in Figure 4B pass through the averaged data in the graph, but the slope adjustments reported are for individual bankers in an analysis of covariance model adjusting by banker reputation the benefits of access to structural holes. As for network status as a contingency factor in Figure 1B, the analysis of covariance used to test for the contingency illustrated in Figure 4B predicts achievement (here 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).
469 banker observations, the standardized regression coefficient for log network constraint predicting annual compensation is -0.34, with a 95% confidence interval of plus or minus 0.08. Figure 5 describes how that aggregate correlation varies around each banker when the bankers are rank ordered from high to low social standing. The horizontal axis intersects the vertical axis at the -0.34 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 5 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. A 95% confidence interval around the aggregate compensation-constraint correlation varies from -0.42 to -0.26. 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 5 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.

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 5. 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 stable for status and reputation in samples of 20 or more, and increases for larger samples. The criterion 24 used in Figure 5 is an arbitrary selection within a set of adjacent suitable alternatives.
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.

Three points are illustrated in Figure 5. First, the correlogram provides a useful picture of who benefits from access to structural holes. The analysis of covariance models in Figure 3B and Figure 4B — 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). Second, network advantage is fairly exclusive. More people are eligible by reputation than by status, but status and reputation both leave more than half of the population ineligible. And the people in Figure 5 are investment bankers; presumably a market-based line of work keyed to ability more than social standing. In more structured lines of work, network advantage could be much more exclusive. Third, the social standing needed to be a successful broker seems to be defined by a threshold rather than an amount. The patterns in Figure 5 do not vary monotonically with social standing. 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. Bankers above a certain threshold of status or reputation benefit from access to structural holes. Bankers below the threshold do not.

**Diagnostic Contingency**

The thresholds illustrated in Figure 5 provide an unobtrusive organization diagnostic with which difficult people 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 5 is discussed elsewhere (Burt, 2010:Chp. 7). Figure 6 contains three illustrative applications.

Figure 6A is an executive-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 6A. 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.

——— Figure 6 About Here ———

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 went to the other two divisions. The two graphs in Figure 6A explain why. Network brokers were rewarded in the first two divisions; people developed the skills needed to exercise leadership higher in the organization and were promoted. In the third division, network brokers received no compensation above what was appropriate for their years of service. People in the third division were being developed as good supervisors, not leaders. On seeing the evidence, top management removed the third-division vice-president — an unpleasant outcome for him, but less significant than the misfortune he left for the company in the many people at the bottom of Figure 6A unprepared for higher office.

Figure 6B is an example of post-merger integration. The two graphs in Figure 6B are the same as in Figure 6A, 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 6B. 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 6B 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 6C 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 6C. 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 6C 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).

The fact that returns to brokerage are contingent on broker reputation can inform contextual studies of brokerage. For example, Vasudeva, Zaheer, and Hernandez (2013) report that returns to brokerage are higher for firms that operate out of corporatist countries. Firms in the fuel cell industry are compared for their innovativeness (measured by patent volume and citations) and the extent to which their alliance networks span structural holes. The firms are then distinguished by the extent they operate out of a “corporatist” country — which means that trustworthiness and cooperation are commonly
CONCLUSION

Contingency is a productive way to think about reputation. (1) Research is more replicable when reputation is studied for what it does rather than what it is. 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 the achievements associated with structural holes. (2) Relative to status, reputation is a contingency factor less exclusive and rooted in the past. The growth potential of a population is more apparent when asking who has the reputation to be a star rather than who has the status of having been a star. This point is clearly illustrated by the investment bankers in Figure 5. By status, about 20% of the bankers were eligible to benefit from network brokerage. By reputation, more than twice that number were eligible. (3) Network advantage denied for want of positive reputation provides an unobtrusive diagnostic with which difficult people problems in an organization can be addressed in a rigorous, analytical way.
Illustration was provided with respect to detecting groups in which future leaders are not being developed, failed integration following merger or acquisition, and discrimination based on employee age and gender.

REFERENCES


Table 1.
Returns to Brokerage Increase with Job Rank

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Salary Prediction</th>
<th>Standard Error</th>
<th>Test Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manager 1</td>
<td>-$35707</td>
<td>$3,498</td>
<td>-10.21</td>
</tr>
<tr>
<td>Manager 2</td>
<td>-$19892</td>
<td>$3,479</td>
<td>-5.72</td>
</tr>
<tr>
<td>Manager 3 (reference)</td>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>Senior Manager</td>
<td>$15484</td>
<td>$4,143</td>
<td>3.74</td>
</tr>
<tr>
<td>Executive</td>
<td>$61930</td>
<td>$4,835</td>
<td>12.81</td>
</tr>
<tr>
<td>Network Constraint</td>
<td>-$1</td>
<td>$38</td>
<td>-0.04</td>
</tr>
<tr>
<td>Constraint x Mgr2</td>
<td>-$47</td>
<td>$58</td>
<td>-0.82</td>
</tr>
<tr>
<td>Constraint x Mgr3</td>
<td>-$159</td>
<td>$59</td>
<td>-2.71</td>
</tr>
<tr>
<td>Constraint x Senior Manager</td>
<td>-$216</td>
<td>$84</td>
<td>-2.58</td>
</tr>
<tr>
<td>Constraint x Executive</td>
<td>-$697</td>
<td>$132</td>
<td>-5.29</td>
</tr>
</tbody>
</table>

Note — These are regression results for job rank and network constraint predicting dollars of annual salary for supply-chain managers in a large electronics company. Network effects are dollars of salary lost in association with a one-point increase in network constraint. The regression equation contains additional controls in the published analysis (Burt, 2004:371, Model 2, R² = .83).
Figure 1. 
Brokerage for Detecting and Developing Opportunities

Graph A shows idea quality increasing with more access to structural holes. Circles are average scores on the vertical axis for a five-point interval of network constraint among supply-chain managers in a large electronics firm (Burt, 2004:382, 2005:92). Bold line is the vertical axis predicted by the natural logarithm of network constraint. Graph B shows performance increasing with more access to structural holes. Circles are average scores on the vertical axis for a five-point interval of network constraint within each of six populations (analysts, bankers, and managers in Asia, Europe, and North America; Burt, 2010:26, cf. Burt, 2005:56).
Figure 2.
Network Brokers Tend To Be Recognized Leaders
Constraint and status are computed from work discussion networks around twelve hundred managers in four organizations.

A. In the formal organization
Most Senior Job Ranks
(29.5 mean network constraint)

Next-Lower, Senior Ranks
(41.9 mean constraint)

Next-Lower, Middle Ranks
(56.4 mean constraint)

B. And in the informal organization

Network Status ($S_i$ = $\sum z_{ji} S_j$, divided by mean so average is 1.0)

$r^2 = .61$
Figure 3.

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. Adapted from Burt and Merluzzi (2014:Figure 2).
Figure 4. Reputation Alone Can Provide the Social Standing that Facilitates Brokerage

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. Graph B shows z-score annual compensation decreasing with banker lack of access to structural holes. Compensation and network scores are averaged within five-point intervals of network constraint.
Figure 5.
Reputation Enables a Larger 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 6. 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
- Senior Men
  - \( r = -0.40 \), \( t = -5.56 \), \( P < .001 \)
- Women and Junior Men
  - \( r = 0.30 \), \( t = 3.38 \), \( P < .01 \)
- Senior Men
  - \( r = -0.40 \), \( t = -5.56 \), \( P < .001 \)
- Women and Junior Men
  - \( r = 0.30 \), \( t = 3.38 \), \( P < .01 \)