

Bandwidth and Echo: Trust, Information, and Gossip in Social Networks

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There are two schools of thought on how network structures create the competitive advantage known as social capital. One school focuses on the advantages of closure. A network is closed to the extent that people in it are connected by strong relationships. Typical forms of closure are dense networks in which everyone is connected to everyone else, and hierarchical networks in which people are connected indirectly through mutual relations with a few leaders at the center of the network. Both forms provide numerous communication channels, which facilitates the enforcement of sanctions against misbehavior. Closure lowers the risk of trust, and so facilitates collaborative efforts that require trust. A second school of thought focuses on the advantages of brokerage. Markets and organizations are assumed to be a network of interdependent groups in which information flows at higher velocity within than between groups such that separate groups come to know about different things. Boundaries between groups define holes in social structure, “structural holes,”

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creating a competitive advantage in networks that span the holes. Brokerage across structural holes is an advantage for detecting and developing new ideas synthesized across disconnected pools of information.

The two schools of thought are reviewed in detail elsewhere, and the available empirical evidence clearly supports brokerage over network closure as the source of social capital, though closure can be a significant factor in realizing the value buried in a structural hole (Burt 2000).

Trust remains an unresolved concern. The social capital of brokerage depends on trust — since the value created by brokers by definition involves new, and so incompletely understood, combinations of previously disconnected ideas — but trust is often argued to require network closure, precisely the condition that brokers rise above.

My purpose in this paper is to show how the trust association with network closure is more complex, and decidedly less salutary, than argued in closure models of social capital. Building on earlier work (Burt and Knez 1995; Burt 1999a), my argument is framed with respect to two hypotheses describing how closure affects the flow of information in a network. What I will discuss as a bandwidth hypothesis — presumed in closure models of social capital and in related work such as reputation models in economics — says that network closure enhances information flow. The echo hypothesis — based on the social psychology of selective disclosure in informal conversations — says that closed networks do not enhance information flow so much as they create an echo that reinforces predispositions. Information obtained in casual conversations is more redundant than personal experience but not properly discounted, which creates an erroneous sense of certainty. Interpersonal evaluations are amplified to positive and negative extremes. Favorable opinion is amplified into trust. Doubt is amplified into distrust. In Section 1, I summarize as a baseline model the dyadic exchange theory of trust production that ignores social context. Bandwidth and echo hypotheses are introduced in Section 2 as contextual extensions of the baseline. In Section 3, I use network data on three study populations to illustrate contradiction between the hypotheses and empirical support for echo over bandwidth. My summary conclusion in Section 4 is that network closure does not facilitate trust so

much as it amplifies predispositions, creating a structural arthritis in which people cannot learn what they do not already know.

1. TRUST WITHOUT CONTEXT: BASELINE HYPOTHESIS

Take as the unit of analysis the relationship between two people, ego and alter. The baseline for any network argument about trust is a description of how trust would emerge between ego and alter in the absence of a network around them. This is the setting for much of exchange theory and a convenient setting in which to define trust. Two prominent examples are Homans' (1961) analysis of social behavior, and Blau's (1964) analysis of social exchange, but Coleman (1990:Chap. 5) captures trust more concretely for his systems of two-party exchange: Trust is a willingness to commit to a collaborative effort before you know how the other person will behave. Distrust is a reluctance to commit without guarantees about the other person's behavior. This is trust, pure and simple. You anticipate cooperation from the other person, but you commit to the exchange before you know how the other person will behave. A university faculty granting tenure to a professor trusts the professor to continue to be productive. A faculty committee allocating a fellowship to a graduate student trusts the student to work toward the degree. Anticipated cooperation is a narrow segment in the spectrum of concepts spanned by richer images such as Barber's (1983) distinctions between trust as moral order, competence, and obligation. However, anticipated cooperation is much of the trust essential to market competition. The issue isn't moral. It is flexible cooperation. This point is nicely illustrated in fieldwork by Macauley (1963) and Uzzi (1996). Macauley (1963:61) quotes one of his local Wisconsin purchasing agents; "if something comes up, you get the other man on the telephone and deal with the problem. You don't read legalistic contract clauses at each other if you ever want to do business again. One doesn't run to lawyers if he wants to stay in business because one must behave decently."

Viewed as anticipated cooperation, trust is twice created by repeated interaction, from the past and from the future. From the past, repeated experience with a person is improved knowledge of the person. Cooperation in today's game is a signal of

future cooperation. Across repeated games with cooperative outcomes, you build confidence in the other person's tendency to cooperate. The cumulative process can be cast as a statistical decision problem in which you become more certain of the other person across repeated samples of the other person's behavior. The repetition of cooperative exchange promotes trust. More generally, the cumulative process involves escalation. From tentative initial exchanges, you move to familiarity, and from there to more significant exchanges. The gradual expansion of exchanges promotes the trust necessary for them. Whatever the cumulative process, past cooperation is a basis for future cooperation (cf. Zucker 1986, on process-based trust; Staw and Ross 1987, on commitment escalation; Stinchcombe 1990:164-165, on the information advantages of current suppliers for building trust; Kramer 1999, on history-based trust; Kollock 1994, for illustrative laboratory evidence; Gulati 1995; Gulati and Gargiulo 1999, for field evidence). More, the history is an investment that would be lost if either party behaved so as to erode the relationship — another factor making it easier for each party to trust the other to cooperate. Blau (1968:454) summarizes the process as follows: "social exchange relations evolve in a slow process, starting with minor transactions in which little trust is required because little risk is involved and in which both partners can prove their trustworthiness, enabling them to expand their relation and engage in major transactions. Thus, the process of social exchange leads to the trust required for it in a self-governing fashion." Where sociologists explain trust emerging from past exchanges, economists look to the incentives of future exchanges (e.g., Tullock 1985; Kreps 1990; Gibbons 1992: 88ff). The expectation that violations of trust will be punished in the future leads players to cooperate even if defection would be more profitable in a single play of the game. The information contained in past experience and the potential for future interactions are inextricably linked. A player's willingness to forego short-term gains is based on the expectation that current behavior will be used to predict future behavior.

In sum, the baseline prediction is that trust is a correlate of relationship strength. A history of repeated cooperation strengthens the relationship between two people, increasing the probability that they trust one another. Where people have little history together, or an erratic history of cooperation mixed with exploitation, or a consistent

history of failure to cooperate, people will distrust one another, avoiding collaborative endeavors without guarantees on the other's behavior. There is research to be done on the relative weight to be given to dimensions of relational strength, or their impact on trust relative to the level of risk in a proposed collaborative effort (e.g., Kollock 1994; Snijders and Raub 1998; Buskens and Weesie 2000), but it is sufficient here to take as a baseline that trust is a correlate of relational strength.

———— figure 1 About Here ————

Figure 1 is a quick illustration that will be useful in distinguishing the bandwidth and echo hypotheses. Dots in figure 1 are people, and lines indicate relations; solid line for a strong positive relationship, dashed line for a weak relationship, wavy dashed line for a strong negative relationship. In distinguishing strong and weak relationships, I have in mind the usual dimensions of emotional closeness and history between two people (cf. Granovetter 1973:1361). Henry in figure 1 has strong positive relations with three contacts (1, 2, 3), weak relations with two (4, 5), and strong negative relations with two (6, 7). According to the baseline hypothesis (bottom of figure 1), if Henry were asked to name the people he trusts, he would be expected to name contacts 1, 2, or 3. He would be less likely to name contacts 4 or 5, and unlikely to name contacts 6 or 7. If Henry were asked to name the people he distrusts (where distrust is not the complement to trust so much as an opposite extreme separated in the middle by contacts a person neither trusts nor distrusts), he would be expected to name contacts 6 or 7. He would be less likely to name contacts 4 or 5, and unlikely to name contacts 1, 2, or 3.

2. TRUST IN SOCIAL CONTEXT

Expand the ego-alter unit of analysis to include friends, acquaintances, and enemies as third parties to the relationship between ego and alter. Third parties add several dimensions of meaning to exchange between ego and alter, but information flow is my concern in this paper. In particular, I am concerned with the way third parties affect information flow in casual conversation by telling stories; not stories in the sense of deception, just stories in the sense of personal accounts about people; in short,

gossip. Rosnow and Fine (1976:87) offer a definition of what I have in mind when they “broadly define gossip as nonessential (often trivial) news about someone.” For the purposes of this paper, gossip is simply the sharing of news, the catching up, the verbal analog to social grooming, through which we maintain relationships (e.g., Fine 1986; Bergmann 1987; Gambetta 1994; Dunbar 1996).¹

Stories spread by word of mouth, so the social structure of people around alter is like a broadcast system transmitting information to an audience of armchair quarterbacks in vicarious game play with alter. The signal in alter behavior multiplies as it diffuses through third parties. In a game between ego and alter isolated from other people (the situation described by the baseline argument), ego plays one game with alter and receives a signal about alter’s trustworthiness. Put that game in a social context of third parties, and ego receives repeated signals about alter from vicarious game play in third-party stories about alter. Thus, ego has two sources of information on alter: One is ego’s own direct experience with alter. The other is ego’s vicarious experience in third-party stories about alter, where the volume of stories reaching ego increases with the strength and number of ego’s indirect connections to alter through third parties. For brevity, I will refer to indirect connection between ego and alter through third parties as third-party ties. I discuss measures in Section 3, but for the moment let ego’s vicarious experience of alter increase as some function of third-party ties.

2.1 BANDWIDTH HYPOTHESIS

There are arguments in which the information distributed through third-party ties improves ego’s evaluation of alter. Assumptions about information flow in these arguments can be discussed as a bandwidth hypothesis in that third-party ties mean better access to information on alter, which means that ego can be more accurate and confident in his or her evaluation of alter. Coleman (1990: 310; cf. 1988: S104) highlights access to information in his discussion of network closure as social capital: “An important form of social capital is the potential for information that inheres in social relations. . . . a person who is not greatly interested in current events but who is interested in being informed about important developments can save the time required

to read a newspaper if he can get the information he wants from a friend who pays attention to such matters. A social scientist who is interested in being up-to-date on research in related fields can make use of everyday interactions with colleagues to do so, but only in a university in which most colleagues keep up-to-date.” The bandwidth assumption is more obvious in computer simulations of networks because simulating information flow requires a decision about closure’s effect on flow. For example, Baker and Iyer (1992) illustrate with computer simulations that markets with networks of more direct connections could improve communication between producers, which would stabilize prices, a central finding in Baker’s (1984) analysis of a securities exchange. Raub and Weesie (1990) use simulations to describe how reputation effects could vary with the speed with which third-party disclosures reach ego (cf. Yamaguchi 1994; Buskens 1998; DeCanio and Watkins 1998; Buskens and Yamaguchi 1999). Macy and Skvoretz (1998, esp. figure 4) use computer simulations to describe how trust could be more likely between people in a small network of frequent interaction. The assumption that communication is enhanced by third-party ties can be justified with research or everyday anecdotes in which direct communication is more accurate than communication through intermediaries (e.g., Gilovich 1987). Nevertheless, the effect of third-party ties on information flow and subsequent trust production remains an open empirical question.

The bandwidth hypothesis is consistent with balance theory (e.g., Heider 1958; Davis 1970), Granovetter’s (1985) embeddedness argument, Coleman’s (1988, 1990) argument that network closure produces social capital, and reputation theory in economics (e.g., Grief 1989), but other examples are numerous (e.g., see Bradach and Eccles 1989; Nohria and Eccles 1992; Swedberg 1993; several chapters in the Smelser and Swedberg 1994, handbook, esp. Powell and Smith-Doerr 1994; more recently Brass, Butterfield, and Skaggs 1998; DiMaggio and Louch 1998; Gulati and Gargiulo 1999; Buskens and Weesie 2000, for empirical evidence).² The broad conclusion from these arguments is that dense networks of positive relations increase the probability of trust. Mizruchi (1992:Chap. 4) provides a thorough review toward the conclusion that density needs to be distinguished from business unity, but it is

more usual to see network density, or network closure more generally, cited as an antecedent to trust and cooperation.

2.1.1 Enforcement

An enforcement mechanism is often invoked in these arguments. The mechanism is that interconnected third parties can impose on ego a normative opinion of alter. Two prominent examples in sociology are Coleman's (1988; 1990:Chaps. 5, 8, 12) analysis of trust and social capital, and Granovetter's (1985, 1992) discussion of trust emerging from "structural embeddedness" (trust is more likely between people with mutual friends, Granovetter 1992: 44): "My mortification at cheating a friend of long standing may be substantial even when undiscovered. It may increase when the friend becomes aware of it. But it may become even more unbearable when our mutual friends uncover the deceit and tell one another." Illustrating the trust advantage of third-party ties with rotating-credit associations, Coleman (1988:S103; 1990:306-307) notes; "But without a high degree of trustworthiness among the members of the group, the institution could not exist — for a person who receives a payout early in the sequence of meetings could abscond and leave the others with a loss. For example, one could not imagine a rotating-credit association operating successfully in urban areas marked by a high degree of social disorganization." He (1988:S107-S108) summarizes; "The consequence of this closure is, as in the case of the wholesale diamond market or in other similar communities, a set of effective sanctions that can monitor and guide behavior. Reputation cannot arise in an open structure, and collective sanctions that would ensure trustworthiness cannot be applied." Coleman (1988, 1990) explains educational achievement with closed networks among parents, teachers and neighbors that facilitate cooperation in monitoring a child, Putnam (1993) applies the argument to explain higher institutional performance in regional Italy with the trust, norms, and dense networks that facilitate coordinated action, and a literature has emerged on trust as an element of social capital (e.g., Portes 1998; cf. Barker 1993, for an ethnographic account of enforcement in closed networks).

There is an analogous argument in economics. Where sociologists focus on enforcement via exclusion from current relations, economists focus on enforcement

via exclusion from future relationships (e.g., Tullock 1985; Kreps 1990). The argument is that mutual acquaintances make game behavior more public, which creates an incentive for good behavior to maintain reputation within the network, which decreases the risk associated with cooperation and trust between ego and alter, and so increases the probability of cooperation and trust. Thus, Greif (1989) explains eleventh-century Maghribi traders benefiting from overseas agents by forming a coalition through which they could communicate and enforce reputation norms of good agent behavior (similarly Greif, Milgrom, and Weingast 1994, on medieval merchant guilds and the expansion of trade otherwise inhibited by incentives for opportunistic behavior). The Maghribi were middle-class Jews in North Africa whose trade by boat and caravan spanned the Mediterranean. Business was risky in that sale prices and dates were unknown at the time that a merchant invested in a shipment. Greif (1989:860) notes; “A journey from Egypt to Sicily, for example, could take 13 to 50 days, and ships did not always reach their destination. Within the ship the goods were not well sheltered and were often damaged in transit. Furthermore, as the captain of the ship was not responsible for packing, loading, and unloading the goods, there was always the possibility that he or the crew would pilfer the goods.” Greif (1993:528) describes the system that emerged to manage the delivery and sale of goods; “Agency relations among the Maghribis were extremely flexible, as merchants operated through several agents at the same time and even at the same trade center and seem to have been at ease initiating and canceling agency relations . . . Agency relations enabled the Maghribi traders to reduce the cost of trade by better allocating risk through diversification, by benefiting from agents’ expertise, and by shifting trade activities across trade centers, goods, and time.”

With investment separated from return by a logistics nightmare, the flexible agency relations required trust because of the incentives for dishonesty. An agent could sell your shipment at a good price, then give you a fraction of your share of the profits explaining that another boat arrived as he was unloading yours, which lowered the price for your shipment.

Network closure might have made trust practical. Active correspondence between the Maghribi made it possible for them to monitor cooperative and abusive

behavior and so collectively exclude agents known to be abusive. Greif (1993:530) cites an example: “Around 1055 it became known in Fustat that Abun ben Zedaka, an agent who lived in Jerusalem, embezzled the money of a Maghribi trader. The response of the Maghribi traders was to cease any commercial relations with him. His bitter letter indicates that merchants as far away as Sicily had ostracized him. Only after a compromise was achieved and he had compensated the offended merchant were commercial relations with him resumed.”

2.1.2 Prediction

The enforcement possible in a closed network means pressure on ego to adopt the group opinion of alter, and ready communication within the network ensures that ego often hears the group opinion. Repetition and threat of social sanction implies that ego’s opinion of alter will be polarized to extremes (e.g., Laumann 1973: 126; Myers and Lamm 1976; Bienenstock, Bonacich, and Oliver 1990), with repetition the critical ingredient for polarization (e.g., Isenberg 1986; Lamm 1988; Williams and Taormina 1992; Brauer, Judd, and Gliner 1995; Baron et al. 1996). The bandwidth prediction is that ego’s opinion of alter is correlated with third-party opinion, and networks evolve toward a state of balance in which people bound by a strong relationship have similar opinions of others.³ If the people ego trusts have a positive opinion of alter, then their sharing with ego the information justifying their own opinions increases the likelihood of ego trusting alter. The more positive ego’s aggregate connection to alter through third parties, the more likely that ego trusts alter. Conversely, a negative opinion of alter on their part increases the odds of ego distrusting alter.⁴

Figure 1 illustrates how the bandwidth hypothesis extends the baseline. Above and beyond the trust predicted by the baseline hypothesis from the strength of relationship between Henry and his contacts, the bandwidth hypothesis predicts trust as a function of context. Among Henry’s close contacts (1, 2, 3), trust is less likely with contact 1 because there are no third parties to the relationship (his relation with contact 2 is embedded in a positive third-party tie through contact 3, and vice-versa). Between his weak contacts (4 and 5), Henry is less likely to trust contact 4 because there are no third parties to the relationship. Henry’s relationship with contact 5 is

complicated by 5's close relationship with 7, to whom Henry has a strong negative relationship, but ensured by 5's close relationship with a mutual friend, contact 2. To the extent that Henry trusts either of his negative contacts (6 and 7), it would be 7 because his relationship with 7 because he has some guarantees on 7's behavior from 7's embedding in third-party ties through contact 2, and 2's friend 5.

2.2 ECHO HYPOTHESIS

Looking more closely at the social psychology of third-parties passing information to ego, there is reason to question bandwidth in favor of what can be termed the echo hypothesis: third parties do not enhance ego's information on alter so much as they create an echo that reinforces ego's predisposition toward alter.

2.2.1 *Etiquette*

Echo results from etiquette biasing the information that third parties disclose to ego. It is polite in casual conversation to go along with the flow of sentiment being shared. We tend to share in conversation those of our facts consistent with the perceived dispositions of the people with whom we speak, and facts shared are facts more likely to be remembered. The biased sample of facts shared in conversations becomes the information on, and so the reality of, the people discussed (e.g., Grice 1975, on cooperation in conversation; Higgins 1992, on evidence; cf. Rosen and Tesser 1970; Klayman 1995:393-401; Backbier, Hoogstraten and Terwogt-Kouwenhoven 1997).

For example, Higgins (1992) describes an experiment in which the subject, a college undergraduate, is given a written description of a hypothetical person (Donald). The subject is asked to describe Donald to a second student who walks into the lab. The second person is a confederate who primes the conversation by leaking his predisposition toward Donald ("kinda likes" or "kinda dislikes" Donald). The result is that subjects distort their descriptions of Donald toward the expressed predisposition. Positive predisposition elicits positive words about Donald's ambiguous characteristics and neglect of negative concrete characteristics. Negative predisposition elicits negative words about Donald's ambiguous characteristics and neglect of positive concrete characteristics.

Returning to ego's trust in alter, when ego implicitly or explicitly expresses a predisposition toward alter, third parties can be expected to select from their repertoire of stories about alter a story consistent with the flow of the conversation. If ego seems to trust alter, the third party relays stories of games in which alter cooperated. If ego seems to distrust alter, the third party relays stories in which alter did not cooperate. Ego's predisposition toward alter is apparent from a variety of cues ranging from the subtle nuance of a raised eyebrow or a skeptical tone of voice when describing alter, to the blatant signal of expressing a positive or negative opinion. Having shared a story featuring certain alter behaviors, ego and the third party are thereafter more likely to think of alter in terms of the behaviors discussed.⁵

2.2.2 Prediction

The echo hypothesis comes in three steps. First, etiquette biases ego's third-party information on alter toward ego's prior opinion of alter, creating an echo in which third parties reinforce ego's prior opinion. Etiquette might not affect every conversation equally, but allow for a moment that it has some effect on some conversations (I will return to the question of ego and third-party motives in a moment). Second, as discussed under the bandwidth hypothesis, strong third-party ties give ego ready exposure to alter information. In other words, stronger third-party ties create louder echo. Third, also as discussed under the bandwidth hypothesis, the repetition of consistent information makes ego more certain about alter, polarizing ego opinion to extremes of trust and distrust.

There is a testable distinction from the bandwidth hypothesis. Echo and bandwidth both involve ego's direct experience of alter coming together with vicarious experience. The difference is how the two kinds of experience come together. Under the bandwidth hypothesis, ego and third parties share their information on alter and so move together toward a shared opinion of alter. Under the echo hypothesis, ego and third-party opinion differences can continue unspoken because third parties are biased by etiquette to disclose to ego information consistent with what ego already knows. Echo does not depend on ego recalling the individuals from whom specific stories were heard (so stories begin with the line; "I can't recall where I heard it, but I recently

heard that . . .”). The echo argument is only that ego hears stories consistent with his or her predisposition toward alter and becomes more certain about alter. Thus, etiquette makes it possible for gossip to vary from one relationship to the next as a function of predispositions in each, which means that relations can develop independently such that strong positive relationships can exist next to strong negative ones. The bandwidth prediction of correlation between ego and third-party opinion is limited under echo to opinion intensity: The echo prediction is that stronger third-party ties foster more intense ego opinion such that relations adjacent in a network need not be balanced in their direction (I trust friends of my friends), so much as their intensity (I have an opinion, positive or negative, of my friends’ friends).

More specifically, to better distinguish echo from bandwidth, let t_{ea} be a measure of ego’s trust in alter, a variable that ranges from negative one if ego definitely distrusts alter, up to one if ego definitely trusts alter, with neutral zero indicating that ego neither trusts nor distrusts alter. Let z_{ea} be a measure of the strength of ego’s relationship with alter, a variable that ranges from negative one for a strong, negative ego-alter relationship, up to one for a strong, positive relationship, with a neutral zero indicating no prior relationship (see Section 3.3 for measures). The benchmark hypothesis is that t_{ea} increases with z_{ea} . Bandwidth predicts that t_{ea} increases with $\sum_k z_{ek}z_{ka}$, $e \neq k \neq a$, the sum of ego’s indirect connections to alter through third parties k ; in other words, ego’s positive opinion of alter increases with more positive third-party ties to alter. Echo predicts that $|t_{ea}|$ increases with $\sum_k |z_{ek}z_{ka}|$, $e \neq k \neq a$; in other words, the intensity of ego’s opinion of alter increases with the intensity of third-party ties. The trust predicted in strong relationships by the baseline hypothesis is predicted by echo to be more likely and intense in strong relations embedded in strong positive and negative third-party ties. The distrust predicted in weak and negative relationships by the baseline hypothesis is predicted by echo to be more likely and intense when the relations are embedded in strong negative and positive third-party ties.

The most powerful research strategy for testing the hypotheses is to look for situations in which third-party ties in one direction generate trust in the other direction. Bandwidth predicts that such situations should not occur. Echo predicts that they can.

In figure 1, for example, bandwidth and echo would be indistinguishable in predicting who Henry trusts. The hypotheses differ at the extreme of predicting trust within Henry's negative relationships to contacts 6 and 7 (thus the box in figure 1 around the predictions), but the probability of trust is so low in negative relations that this will be a difficult difference to measure with available research instruments.

Distrust is more interesting. The bandwidth hypothesis predicts that Henry is more likely to distrust contact 6 than 7 because there are no third parties to his relationship with 6 and so no reputation costs to 6 for misbehavior toward Henry. The echo hypothesis predicts that Henry is more likely to distrust contact 7 because that relationship is embedded in third-party ties through contacts 2 and 5, both of whom will offer stories about contact 7 to Henry that corroborate Henry's negative relationship with 7.

Similarly for Henry's weak relationships, bandwidth predicts that Henry is more likely to distrust contact 4 than 5 because there are no third parties to his relationship with 4 and so no reputation costs to 4 for misbehavior toward Henry. The prediction is complicated by Henry's negative relationship with contact 7, who could be expected to tell to both Henry and contact 5 negative stories about the other so that a negative relationship develops between them consistent with the negative indirect relationship through contact 7. Cutting against that complication is 7's strong, positive connection with contacts 5 and 2, and the strong, positive third-party tie between Henry and 5 via contact 2. With positive balance of indirect connections between Henry and contact 5, and Henry's relationship with contact 4 embedded in no third-party ties, Henry is more likely to distrust 4 than 5 under the bandwidth hypothesis. Echo reverses the bandwidth prediction. Distrust is more likely with contact 5 than 4 because the relationship with 5 is embedded in third-party ties through contacts 2 and 7. Henry's weak relationships with contacts 4 and 5 are both subject to the inevitable doubts about trusting someone with whom one has only a weak relationship, but third-party gossip is expected to amplify those doubts more with contact 5. Contact 7 would find it especially easy to be polite in reinforcing anything negative that Henry or contact 5 had to say about one another.

2.2.3 Motive

Workshop discussion of the etiquette mechanism often elicits three questions about motives. (1) What if ego has no predisposition toward alter, and so is agnostic when soliciting alter information from third parties? (2) Why do third parties reinforce ego's predisposition regardless of their own opinion? There are individual differences in personal preference and opportunities to be with alter, so ego and third parties are likely to sometimes disagree in their evaluations despite their strong relationship with one another. For a third party displeased with alter, gossip is an opportunity to get even (e.g., Black, 1995:855n; "gossip is the handling of a grievance by an informal hearing in absentia — in the absence of the alleged offender."). (3) Given the etiquette bias in third-party information, why doesn't ego discount what third parties say? These questions have to be addressed if echo is to be a believable alternative to bandwidth.

At minimum, the etiquette mechanism is a behavioral trait exogenous to the argument. Empirical research shows that the mechanism exists, and the echo hypothesis is an implication of its existence.

Digging deeper for more satisfying answers, begin with the question of ego agnostic. One answer to the question is to say that there are no such people because everyone has predispositions. Ego's predisposition could be based on no more than an image invoked by the name of a new acquaintance, or some random exogenous shock. Given a predisposition, however faint, the research question is whether predisposition is revised toward third-party opinion (bandwidth), or is reinforced under the etiquette mechanism to become ego's certain opinion (echo). Another approach is to ask what information an agnostic would hear first from third parties. Initial information will be predisposition in subsequent conversations. To the extent that bandwidth exists, the most likely opinion of alter circulating in a closed network is the group opinion, so the information most likely to be first heard would be the group opinion, whereupon etiquette's effect in subsequent conversations would be to reinforce ego's certainty in the group opinion of alter thus creating ostensible evidence of the bandwidth hypothesis. The research implication is that ego agnostics would obscure evidence of echo.

Turning the broader question of motives, it is not impossible to find reasons for the etiquette mechanism. Civility is one. Etiquette allows people of diverse backgrounds and interests to ignore social differences that would otherwise interrupt the flow of conversation (e.g., Nyberg 1993; Kuran 1997, on the need for deception in everyday life). Efficiency is another motive. In the press of other demands on the third party, corroborating ego's predisposition ends the discussion without seeming rude, and information consistent with what we already know is easier to accept (e.g., Ross and Anderson 1982, on attribution errors; Klayman 1995, on confirmation bias). Identity is a third motive. People define who they are in part with stereotypes of people on the social boundary of their group (e.g., Gluckman 1963; Elias and Scotson 1965:Chap. 7, Erikson 1966; Wittek and Wielers 1998).

Identity is at the heart of the broader motive behind gossip. Gossip is not about information. It is about creating and maintaining relationships (a verbal analogue to grooming among primates, Dunbar 1996). Relaying a story about alter consistent with ego's predisposition highlights similarity between third party and ego with respect to other people. Moreover, there is the history of exchanges to consider. As third parties strengthen their relations with ego by offering information about alter consistent with ego's predisposition toward alter, ego strengthens his or her tie with the third party by asking for the information and responding to third-party opinion. When you and I discuss our views of John, we reinforce our relationship with one another and narrow the confidence interval around our joint opinion of John. Conversations about social structure are an integral part of building and maintaining relationships, with the primary effect of reinforcing the current structure. Ego's search for information on whether to trust alter is less often a search *de novo* than it is a search for a quick update on stories vaguely recalled; "Didn't you once have some trouble working with John?" Information flow is a by-product of gossip, a by-product perceived to be unintentional, and so unbiased. As Gambetta (1994:11) puts it, "Gossip does not work well if the receiver suspects ulterior motives behind the transmitter's story."

An alternative intuition is to say that ego is misled by lower quality information in gossip. For example, Gilovich (1987) showed undergraduates a video of a person describing "something you are not too proud of," then asked subjects to describe the

person on audio tape, and rate his culpability for his bad behavior. A second subject then listens to the audio tape, and rates the person's culpability. Evaluations by the students with second-hand knowledge from audio tape are more extreme in blaming the person for his bad behavior. Gilovich argues that second-hand accounts elicit more extreme evaluations because the second-hand accounts leave out mitigating circumstances and situational constraints. That reduces the accounts to "cheap talk" which should be discounted (e.g., Gibbons 1992:210ff, on cheap-talk games). Why should ego believe a third-party account stripped of situational details? The etiquette mechanism requires less naiveté on ego's part. Third-party accounts are accurate, but not representative. Other things being equal, each third party has positive and negative stories about alter. Ego receives complete stories, but not a representative set of stories. Ego cannot know s/he is getting a subset of information biased toward the positive (or negative) because ego does not know the scope of each third party's information on alter.

Still, ego has been a third party in other conversations, should be aware of the etiquette mechanism, and so discount information in third-party accounts.

That is, unless there is no meaningful point estimate of alter's trustworthiness. The truth is that alter behaves well with some people and not with others. This truth about relationships is illustrated by two features of the colleague evaluations between bankers analyzed in the next section. First, everyone is the object of positive and negative evaluations: Each banker has two or more people who say s/he is doing a poor job, and at the same time has two or more people who say that s/he is doing a good job. In fact, positive and negative evaluations are correlated: The number of evaluations a banker receives has a .91 correlation with the number of positive evaluations received, and a .80 correlation with the number of negative evaluations. Second, analysis of variance across the thousands of interpersonal evaluations breaks down to 25% of the variance due to differences between bankers making an evaluation (some bankers give higher evaluations on average), 13% due to differences between bankers receiving an evaluation (some bankers receive higher evaluations on average), and the residual 62% due to qualities specific to evaluator-evaluated pairs of bankers. In other words, evaluations are more a function of the two

bankers involved than either person individually (see Kenny and Albright 1987:399, for a similar result in relations between undergraduates).

More generally, the truth about alter is for ego an evaluation with ambiguous empirical referent, an evaluation to be discussed rather than determined, and there is ample empirical evidence that such evaluations are shaped by discussion (e.g., Festinger, Schachter, and Back 1950; Coleman, Katz, and Menzel 1966; Pfeffer, Salancik, and Leblebici 1976; Burt 1987, 1999b). If ego seems predisposed to trust alter, perhaps ego is one of the people who will get along with alter, and it is not surprising that ego's friends relay stories about alter consistent with ego's positive predisposition. On the other hand, if ego seems predisposed to distrust alter, perhaps ego is one of the people will not get along with alter, so it is not surprising that ego's friends offer stories about alter consistent with ego's negative predisposition. Gossip is not about truth, it is about sociability (e.g., Gambetta 1994: 13; "Plausibility is more relevant than truth. A convincing story gets repeated because of its appeal not its truthfulness."). The by-product of that sociability is that predispositions are reinforced, and people become more certain in their opinions of one another.

3. ILLUSTRATIVE EVIDENCE

I have survey network data on three study populations: a probability sample of 284 senior managers in a leading manufacturer of electronic components and computer equipment, a saturation sample of 317 staff officers in two financial companies, and a census of 345 bankers in the investment banking division of a large financial company. The senior managers are a benchmark because of published research on the network structure of their social capital. The staff officers are included for replication. Their work (human resources) differs from the work of the senior managers (primarily engineering and sales), but their network data were obtained with a questionnaire nearly identical to the senior-manager questionnaire, so evidence on the officers can be a replication of evidence on the senior managers. The bankers are included for replication and the richer network data they provide.

3.1 BASELINE FOR SENIOR MANAGERS AND STAFF OFFICERS

Colleague relationships are distinguished in figure 2 by their relative strength. The relationships were all important in one way or another, but some were stronger than others. The managers and staff officers answered a series of sociometric questions asking them to name (a) people with whom they most often discussed important personal matters, (b) the people with whom they most often spent free time, (c) the person to whom they report, (d) their most promising subordinate, (e) their most valued contacts in the firm, (f) the people they would name as essential sources of buy-in to their replacement if they were promoted to a new job, (g) the contact most important for their continued success in the firm, (h) their most difficult contact, and (i) the people with whom they would discuss moving to a new job in another firm. The 284 senior managers cited a total of 3,015 colleague relations. The 317 staff officers cited 3,324. Respondents in both populations were asked to indicate the emotional strength of their relationship with each colleague. “Especially close” relations are labeled strong ties in figure 2, “close” relations are intermediate, while “less close” and “distant” relations are labeled weak. Details on sampling and surveying the senior managers are available elsewhere (Burt 1992, 1997, 1998, 2000, on their networks as social capital; Burt and Knez 1995, 1996, on their trust and distrust of colleagues).⁶

As predicted by the baseline argument, trust is more likely in strong relations (combine white and gray bars at the top of figure 2). Among the senior managers, 39% of strong relationships were cited for trust, versus 4% of weak relationships. The difference is larger among the staff officers, 67% of strong versus 4% of weak. There are many indicators that could be taken as evidence of trust. Here, trusted colleagues are those few cited as someone with whom the senior manager or staff officer would discuss leaving the firm for a job elsewhere: “If you decided to find a job with another firm doing the same kind of work you do here, who are the two or three people with whom you would most likely discuss and evaluate your job options?” The element of trust is the risk associated with other people in the firm knowing that you are thinking of leaving. Employment is more than a contract, it is a membership. Moving to another firm repudiates membership, especially in these study populations of senior people and a loose internal structure that highlights the boundary between inside and

outside as an element defining employee identities. As a person threatening to leave, you become the subject, rather than a source, of the office gossip that builds solidarity among colleagues.

———— figure 2 About Here ————

As predicted by the baseline argument, distrust is more likely in weak relations (bottom panel in figure 2). Distrust is concentrated within weak relationships; 24% of weak relations are cited for distrust by the senior managers, 21% by the staff officers. Again, there are many qualities that could be taken as evidence of distrust. Here, it is indicated by a sociometric citation for most difficult colleague: “Of your colleagues, who has made it the most difficult for you to carry out your job responsibilities?” The citation is open to alternative interpretations since it does not ask about distrust explicitly (Krackhardt 1996). However, respondents were asked to explain why they cited the person they did, and their explanations indicate distrust in the sense of non-cooperation (see Burt and Celotto 1992; Burt 1999a, for content analysis of their explanations).

3.2 BANKER BASELINE

Network data on the third study population come from an annual survey of employees within the investment banking division of a large financial organization. The respondents, whom I will discuss as “bankers,” include senior people responsible for making and closing deals, as well as people in administrative positions who manage bankers in lower ranks, or manage analysts who service the bankers. The data are a census in that virtually all eligible employees return the survey questionnaire because responses are used as “peer evaluations” to guide promotion and bonus decisions (see Burt 1997, 2000, on the banker networks as social capital). Data quality is also high because the data are routinely studied by a staff of analysts looking for strategic behavior such as blackballing between cliques, or inflated evaluations between friends who had little business with one another.

The results in figure 2 describe 345 bankers citing colleagues, in their own division and in other divisions of the organization, for a total of 12,655 important relationships.⁷ For each person cited as a frequent and substantial business contact,

the banker was asked for a summary evaluation of the colleague as poor (persons receiving multiple poor evaluations are encouraged to look for a different line of work), adequate (a negative evaluation akin to the grade of C in graduate school), good, or outstanding (persons receiving multiple outstanding evaluations are put on an unwritten list of “stars” for whom special efforts are to be made to prevent them from leaving the organization). The words poor, adequate, good, and outstanding are synonyms for the words actually used in the peer evaluations.

Timing is one of ways in which these data are richer than the data on the managers and officers. Banker evaluations of trust and distrust on the vertical axis of figure 2 are from this year’s peer evaluations. Categories of relationship on the horizontal axis come from last year’s evaluations. Strong banker relations in figure 2 are with colleagues cited last year as outstanding, and the weak relationships are with colleagues not cited last year. Much can happen over the span of a year in the hurley-burley of investment banking — note that most of this year’s important relationships were not cited last year (9,526, or 75%) — but there is a qualitative difference between relationships new this year and relations sufficiently established to have been cited and evaluated in last year’s survey.

A second quality for which the banker data are richer is their extension into negative relationships. The senior managers and staff officers were asked for a single negative relationship. The bankers were asked to cite all colleagues with whom they had frequent and substantial business dealings, then could offer negative evaluations of any or all. The negative banker relations on the horizontal axis in figure 2 are 544 relationships judged adequate and another 208 judged poor.⁸

In addition to summary evaluation, bankers evaluated relations for specific qualities. Trust was one of the qualities. The trust citations at the top of figure 2 are to colleagues given the most positive evaluation for their cooperation in reaching collective goals, and integrity in sharing information and responsibility for disappointing results (again, cooperation and integrity are synonyms for the terms actually used in the peer evaluations). Distrust citations at the bottom of figure 2 are to colleagues whose cooperation and integrity were evaluated adequate or poor. The majority of

relationships fall between the extremes of trust and distrust (of the 12,655 cited relationships, 7,880 were cited neither for trust nor distrust).

As predicted by the baseline hypothesis, bars increasing from left to right for bankers at the top of figure 2 show trust more likely within stronger relationships. Bars decreasing from left to right for bankers at the bottom of figure 2 show distrust more likely within weak relationships.

3.3 AMPLIFIED TRUST AND DISTRUST

To move beyond the baseline argument, I need a measure of the third-party ties in which ego-alter relationships are embedded. Indirect connection in a network is measured as a product of direct connections (from path distance in graph theory, e.g., Scott 1991:71; Wasserman and Faust 1994:144-145) and that is the measure I use: The strength of third-party tie from respondent to colleague is the respondent's relation with a third-party k multiplied by the third-party's relation with the colleague, quantity summed across third-parties k . The senior managers and staff officers were asked to describe the relationship between each pair of colleagues they cited as especially close (1.0), distant in the sense that the colleagues were total strangers or would rather not spend time together (0.0), or somewhere between the two extremes (.34, a quantitative score assigned to the middle response category from a loglinear association model of the survey network data, Burt 1992: 287-288). I assigned to the banker data arbitrary quantitative scores consistent with opinion in the organization: 1.0 for a maximum evaluation (outstanding), .5 for middle evaluations (.5 for good, -.5 for adequate), and -1.0 for the minimum (poor), leaving zero for disconnections between colleagues who do not cite one another. For the purposes of this section, I measure banker third-party ties in terms of their absolute magnitude (i.e., $\sum_k |z_{ek}z_{ka}|$), postponing directed ties to the next section. The choice between direction and magnitude is only a choice in the banker networks (network data on the other two study populations only describe variably positive connections between contacts), and results on directed ties in the next section show that their relations are balanced in intensity rather than direction (figure 3), so absolute magnitude is the appropriate measure of third-party ties in this section.

3.3.1 Amplified Trust

Gray bars in figure 2 describe relationships embedded in strong third-party ties (indirect connection between respondent and colleague is stronger than average for their study population), and white bars describe relationships that were comparatively free of third parties. As predicted by both the bandwidth and echo hypotheses, the trust concentrated in strong relationships is more likely when embedded in strong third-party ties. At the top of figure 2, gray bars higher than adjacent white bars show that trust is more likely in strong relationships when they are embedded in strong third-party ties. Among the senior managers, for example, 50% of strong relations embedded in strong third-party ties were cited for trust (gray bar), versus 35% for strong relations embedded in weak third-party ties (white bar).

Statistical summary is provided by logit equations in the first three columns of Table 1.⁹ The first row of effects describes the baseline positive association between trust and relationship strength (standard deviations are listed in the table as a frame of reference for unit increases in the predictors). As predicted by bandwidth and echo, the trust associated with strong relationships is more likely with third parties. Effects in table 1 for the interaction with strong relationships (TP x STRONG) describe the increase in trust, which is statistically significant in all three study populations (from a 2.5 test statistic for the senior managers, to 8.8 for the bankers).¹⁰

3.3.2 Amplified Distrust

Equations in the second three columns of table 1 predict distrust. The first row of effects describes the baseline negative association between distrust and relationship strength. Distrust was extremely unlikely between colleagues emotionally close, regardless of third parties (negligible effects for TP x STRONG interactions).

———— table 1 About Here ————

As predicted by echo, and in contradiction to bandwidth, distrust is more likely in weak relationships embedded in positive third-party ties. The effect is illustrated at the bottom of figure 2 by the gray bars higher than adjacent white bars over weak relationships. Among the senior managers, for example, 11% of weak relations

embedded in weak third-party ties were cited for distrust (white bar), which more than tripled to 37% if the third-party tie was strong (gray bar). The increase is statistically significant (3.0 test statistic in table 1). There is similarly significant increase among the staff officers. Among the bankers too, distrust is more likely within negative and weak relations embedded in strong third-party ties.

3.3.3 Frequency and Duration

Respondents with more personal experience of a colleague are predicted by the baseline hypothesis to have a more certain opinion of the colleague because they have more information on which to base opinion. The history of interaction leading to the current strength of relationship between respondent and colleague is held constant in table 1 by holding constant the current strength of relationship. Some of that history, however, might be picked up by third-party ties. To the extent that mutual friends, enemies, and acquaintances accumulate with the time two people spend together, a stronger third-party tie between respondent and colleague would mean more respondent personal experience with the colleague, so the respondent should be more certain about the colleague; not because of third-party gossip but because of having more information on the colleague.

What data I have on frequency and duration are consistent with the models in table 1.¹¹ In the study populations of managers and officers, respondents were asked about duration (“How long have you known each person?”) and frequency (“On average, how often do you talk to each?”). Consistent with the baseline hypothesis, stronger relations occur between people who often talk to one another or have known one another for a long time. Regressing strength of relationship in table 1 across frequency and duration yields strong direct associations for the managers (respective t-tests of 18.5 and 10.5 with adjustment for autocorrelation within ego networks) as well as the staff officers (respective t-tests of 13.4 and 15.0). Nevertheless, effects in table 1 are robust to controls for frequency and duration. Frequency has no direct association with trust if added to the models in table 1 (0.7 z-score for the managers, -0.6 for the officers). Duration has a direct association with trust (3.8 z-score for the managers, 7.7 for the officers), but the key trust associations with strong ties and third

parties remain: The 7.5 z-score for strong ties among the managers in table 1 increases to 9.1, and the 2.5 z-score for strong ties embedded in strong third-party ties increases to 3.2. The 6.7 z-score for strong ties among the officers in table 1 remains the same, and the 7.2 z-score for strong ties embedded in strong third-party ties is 6.3. Neither frequency nor duration has a direct association with distrust if added to table 1 (-0.9 and -0.2 respectively for the managers, -1.5 and -1.0 for the officers) and the key distrust associations with weak ties and third parties remain as strong as reported in table 1. In sum, and consistent with the specification in table 1, the trust effects of frequency and duration are entirely or largely mediated through their association with relationship strength measured in terms of emotional closeness, which is associated with trust and distrust as reported in table 1.

3.4 BALANCE IN INTENSITY RATHER THAN DIRECTION

Figure 3 and table 2 contain evidence more discriminating in supporting echo over bandwidth. The results require data on third parties to all relationships at risk of being cited for trust or distrust, so I am limited to the banker study population (in the other two populations, I do not have data on relations beyond each respondent's contacts). The relations described in figure 3 and table 1 are all 118,680 possible between the bankers (345 bankers times 344 banker colleagues). Of the 118,680 relationships that could have been cited, 8,298 were (7% density). The other 4,357 banker citations in figure 2 were to colleagues elsewhere in the organization (see note 7). Shared awareness of other bankers and a higher density of cited relations within the division mean that relationships within the division are more likely (relative to the 4,357 relations scattered across other divisions) to show bandwidth's predicted balance between adjacent relationships.¹²

———— figure 3 and table 2 About Here ————

Relations are sorted on the horizontal axis of figure 3 with respect to third-party ties. In the left graph, relations vary from zero negative third-party ties up to ten or more. Evaluations of poor or adequate are treated as negative, evaluations of good or outstanding as positive (as in figure 2). Illustrated at the bottom of figure 3, a negative third-party tie between banker and colleague could occur in either of two ways

(reported separately in table 2): the banker made a positive evaluation of someone who made a negative evaluation of the colleague, or the banker made a negative evaluation of someone who made a positive evaluation of the colleague. In the right graph, relations vary from zero positive third-party ties up to ten or more. Illustrated at the bottom of the graph, a positive third-party tie between banker and colleague could occur in either of two ways: the banker made a positive evaluation of someone who made a positive evaluation of the colleague (a friend of my friend is my friend), or the banker made a negative evaluation of someone who made a negative evaluation of the colleague (enemy of my enemy is my friend).

There is evidence consistent with the both the bandwidth and echo hypotheses. Lines in the graphs show how trust and distrust are associated with third parties. Logit equations in table 2 report the statistical significance of the associations holding constant last year's relationship and the number of third parties available to a banker as possible indirect ties to colleagues (cf. table 1). The solid line to the right in figure 3 shows the probability of trust increasing with the number of positive third-party ties. As predicted by bandwidth and echo, the more mutual friends and mutual enemies a banker and colleague share, the more likely that the banker will cite the colleague for outstanding cooperation and integrity. Model I in table 2 shows that the increase is statistically significant. The effect exists for both kinds of positive third-party ties, but is stronger with friends of friends (Model III) than with enemies of enemies (Model II).

Also, consistent with the bandwidth hypothesis, the dashed line to the left in figure 3 shows the probability of distrust increasing with negative third-parties. The more often that banker and colleague had separate constituencies — the banker's contacts having a low opinion of the colleague, or the colleague's contacts being people of whom the banker has a low opinion — then the more likely that the banker cited the colleague for noncooperation and low integrity. Model VI in table 2 shows that the increase is statistically significant, and again the effect exists for both kinds of negative third-party ties, though it is stronger with enemies of friends (Model X) than with friends of enemies (Model IX). Not surprisingly, bankers were more affected by the opinions of third parties they admired (Models III and X), than those they did not (Models II and IX).

The striking result is the evidence that contradicts bandwidth in favor of the echo hypothesis: The solid line to the left in figure 3 shows that the probability of trust increases with negative third-party ties, and the dashed line to the right in figure 3 shows that the probability of distrust increases with positive third-party ties. Giving authority to the visual results in Figure 3, statistical results in table 2 show significant increases in trust, and significant increases in distrust, with each kind of positive and negative third-party tie. In fact, the probability of trust within a relationship is more associated with total third-party ties than the balance toward positive third-party ties, and the probability of distrust is associated more closely with the total than with a balance toward negative third-party ties.¹³

A skeptical reader might want to attribute the results in figure 3 to something unusual in investment banking, but the results are more likely typical of medium to large organizations. The results could seem unusual because sociometric choices in survey network data are not usually analyzed with respect to the population of relations that could have been cited. Here, the survey network data are analyzed in conjunction with a roster of people in the study population who could have been cited. Another generic feature of the results in figure 3 and table 2 is their consistency with a common finding in network analysis — relationships develop in clusters. As the number of third-party ties between two people increase, it becomes increasingly likely that the two people know about, and have an opinion of, one another. When completing their annual peer evaluations, bankers were more likely to remember work with colleagues with whom they had mutual friends, acquaintances, or enemies. More third parties increased the likelihood of remembering work with the colleague.

Central to this paper is the empirical support for echo over bandwidth. Finding trust associated with negative third-party ties and distrust associated with positive ties is a clear contradiction to bandwidth's prediction of balance in adjacent relationships. It is precisely the pattern predicted by echo. With gossip pandering to predispositions, strong positive relations can develop next to strong negative ones. What is balanced in relationships affected by gossip is not the direction of adjacent relations, but rather their intensity. Strong third-party ties mean a high volume of gossip, from which strong relationships emerge, positive and negative, depending on predispositions.

4. CONCLUSION

My purpose in this paper has been to show how the trust association with network closure is more complex, and decidedly less salutary, than argued in closure models of social capital. A network is closed to the extent that people in it are connected by strong relationships, either directly (dense network), or indirectly through a few leaders at the center of the network (hierarchical network).

This chapter has been framed by two hypotheses describing how closure affects the flow of information in a network. The bandwidth hypothesis — presumed in closure models of social capital and in related work such as models of reputation in economics — says that network closure enhances information flow. The echo hypothesis — based on the social psychology of selective disclosure in informal conversations — says that closed networks do not enhance information flow so much as they create an echo that reinforces predispositions.

Much of the published research on trust is consistent with bandwidth and echo. Distrust is more likely within weak relationships, and trust is more likely within strong relationships embedded in positive third-party ties. Consistent with that evidence, I too find that distrust is more likely within weak or negative relationships, and trust is more likely in strong, positive relationships, especially when the relationships are embedded in strong third-party ties (figure 2).

Evidence more broadly considered supports echo over bandwidth. In the past, trust research has focused on networks of positive relations, which is where both bandwidth and echo predict that third parties increase the probability of trust. Evidence consistent with the echo hypothesis is appearing as research expands to include network effects on negative relationships (e.g., Burt and Knez 1995; Burt 1999a, on distrust and third parties; Labianca, Brass, and Gray 1998, on perceptions of conflict and third parties; Gulati and Westphal 1999, on third-party interlocks amplifying positive and negative predispositions to alliance between organizations). Consistent with the emerging evidence, I too find that strong, positive third-party ties do not facilitate trust within weak relationships so much as they are associated with

distrust (figure 2) and angry character assassination (Burt 1999a). Bandwidth is more explicitly rejected in favor of echo by the fact that colleague relationships are balanced in their intensity, not their direction (figure 3).

The broader range of evidence calls into question the common assumption that closed networks improve information flow. Strong indirect connections between people are typically assumed to increase the probability of communication such that each knows what the other knows. The evidence presented here supports an alternative defined by the echo hypothesis; strong connection through third parties increases the probability of social reinforcement such that network closure creates echo, not accuracy. With an etiquette filter on the information that passes between people, strong connections mean more conversations in which third parties corroborate ego's opinion so ego hearing his or her opinion echoed becomes more certain, more intense, in his or her opinion of alter.

Bandwidth and echo represent a fundamental choice for theoretical models of trust and its correlates. Down the bandwidth path of network closure improving information flow lies theory in which people are better off when strongly connected to one another. Here lie stories about closed networks providing social capital and reputation (e.g., Coleman 1988, 1990; Greif 1989; Putnam 1993). Alternatively, the path presuming echo leads to theory in which perception drifts away from empirical reality, and what closed networks produce is ignorant certainty. Here lie stories about scapegoating, groupthink, and distorted reputations defined by polarized trust and distrust in closed networks. Of course, there are also positive stories about amplified trust in charismatic leaders, and transcendental visions of a better future, but the positive stories are not unique to the echo hypothesis since bandwidth and echo both predict amplified trust within strong relations embedded in closed networks. Still, given the evidence of amplified distrust so clearly supporting echo over bandwidth where the two arguments contradict one another, it is reasonable to ask whether the published evidence of amplified trust consistent with bandwidth and echo is in fact due to echo, not bandwidth. This is a question for future research. Meanwhile, my summary conclusion is that network closure does not facilitate trust so much as it

amplifies predispositions, creating a structural arthritis in which people cannot learn what they do not already know.

5. NOTES

¹I am excluding third parties strategically inserted between ego and alter to strengthen or weaken their relationship, such as third-party facilitators and positions of authority in a corporate or legal hierarchy (e.g., Coleman 1990:43-44, on complex relations; Black and Baumgartner 1983; Black 1993:Chap. 6, on third parties in the legal process; Morrill 1995:92-140, for ethnographic illustration of the Black and Baumgartner view applied to managers). The third-party effects predicted by bandwidth and echo can occur with such third parties, but I put such third parties aside because adding them requires a consideration of the motives behind their presence. This paper is about what could be termed “natural” third-party effects in casual conversations, and as Gambetta (1994:11) so nicely states the matter in his review; “Gossip does not work well if the receiver suspects ulterior motives behind the transmitter’s story.”

²Lawler and Yoon (e.g. 1993, 1998) propose a “theory of relational cohesion” that stands uniquely intermediate between what I am here discussing as baseline and bandwidth. As in the baseline, Lawler and Yoon predict that trust and commitment emerge from escalating exchanges, emphasizing the “emotional buzz” associated with positive exchange. Beyond the baseline, certain relations develop and others do not as a function of location in network structure. Where the structure of alternative contacts in a system of peers makes certain pairs of people more likely to have positive initial exchanges with one another, that likelihood, however slight, encourages further exchange, which can be expected to create clusters of dense, positive relations (cf. Feld 1981, on social foci). Bandwidth and echo extend the baseline to include the trust implications of dense third-party ties around a relationship. As Lawler and Yoon grounded the baseline argument in opportunity, it could be productive to ground bandwidth and echo in the opportunity structure of a network to see if the two arguments contradict one another in their etiology as they do in this paper in their consequences.

³Based on Heider’s (1958) initial work, network balance and its extension, transitivity, was a popular application of cognitive consistency to social structure (e.g., Davis 1970). Later work was primarily methodological, but balance continues to be discussed as an equilibrium in theory of consistency between adjacent elements in a network (for review, see Burt 1982:55-60, 71-73; Scott 1991:13-16; Wasserman and Faust 1994:Chap. 14).

⁴Empirical support is likely to be stronger for balance with positive than negative third-party ties. If the reputation advantages of treating friends well is matched by advantages from abusing enemies, then sanctions discouraging abusive behavior between colleagues with mutual friends could exist along with sanctions encouraging abuse of people distrusted by one’s friends — as is explicit in Greif’s (1989:868) analysis of the Maghribi traders who felt free to cheat ostracized traders. However, the Maghribi lived within a relatively stable boundary between insiders and outsiders. To see why balance with negative third-party ties need not follow from the enforcement mechanism, consider a structure in which social boundaries are prone to change, as is typical of the boundaries between groups within an organization. A colleague capable of abusing someone today who is not “one of us,” is capable of abusing you tomorrow if you are no longer considered one of us. The more complex and dynamic an environment, the more likely that social boundaries between us and them will change. The only guaranteed result of abusive behavior is that the abuser will acquire a reputation for being someone capable of abuse. Abusive behavior, even if directed toward today’s legitimate targets, has ambiguous signal value in terms of reputation. The one unambiguous prediction from the enforcement mechanism is that positive third-party ties increase the probability of cooperative behavior as ego and alter signal their cooperative predispositions to the third parties.

⁵Etiquette is an element in the broader process of people defining one another as a by-product of the gossip they share (e.g., Cialdini 1989; Tilly 1998). I know of no published fieldwork that offers ethnomethodological analysis of sustained conversation between senior managers, but the etiquette

mechanism is a generic feature of gossip and so evident in conversation at lower levels and outside the corporation, on which there are field studies. For example, Fine (1986: 409) summarizes his analysis of teenager gossip as follows: "Teenagers must present actions which are susceptible to several possible interpretations in ways which are likely to be supported by other speakers, either through ratification utterances or by story-chaining. The audience members actively or tacitly ratify the speaker's remarks, even if they disagree with the talk in principle. Interactants have techniques by which they can express their disagreement — through later contrary examples (which, too, are usually not disagreed with) or by audience role distance through joking interjections." This is precisely the etiquette mechanism described in the text of going along with the flow of the conversation which implies the echo hypothesis of amplified opinion (e.g., Fine notes the exaggerated opinions in which some teenagers can "do no wrong," while others can "do no right.").

⁶The staff officers are a saturation sample in the sense that all human-resource employees in the two firms were mailed a network questionnaire, of whom 218 in one firm returned the questionnaire (65% response rate; see Burt, Jannotta, and Mahoney 1998; Burt 2000, for results on the social capital of their networks) and 99 in the other firm (40% response rate). Respondents were representative on various dimensions including rank, age, salary, gender, and geography, except that employees in senior ranks of the first firm were more likely to return the questionnaire. I combine the respondents as a single study population because their work is so similar, and so different from work in the other two study populations. There are no significant differences between the two staff-officer samples in the number of colleagues cited (13.1 average in one firm, 12.4 in the other, 1.6 t-test, $P = .10$), or the sociometric results in table 1 (0.9 z-statistic for a firm dummy added to the officer trust equation, 0.03 for the distrust equation, $P > .3$).

⁷The 12,655 cited relations are 8,298 to colleagues in the division (insiders) and 4,357 to colleagues in other divisions of the company (outsiders). Trust and distrust are similarly associated with third parties within and beyond the division. Add to the logit equation in table 1 predicting banker trust a dummy variable distinguishing the 4,357 relations to outsiders. The dummy variable has a positive association with trust (3.3 z-score, $P < .01$, indicating that the bankers acknowledge help more than disruption from people beyond their division), but there is no statistically significant effect on the incidence of trust within strong or weak embedded relations (-1.2 z-score for strong, -1.0 for weak; $P > .2$). Adding the outsider dummy to the logit equation for distrust shows fewer citations for distrust (-2.9 z-score, $P < .01$), but no significant effect on the incidence of distrust within weak or negative embedded relations (-0.7 z-score for weak, -0.4 for negative; $P > .5$). Looking ahead to the next section, the insider-outsider distinction is irrelevant to the network balance results in figure 3 because the results describe balance within the division.

⁸As validation for the necessarily limited number of negative relations that can be obtained in an academic or consulting survey, it is interesting to note how few negative relations are elicited when there is no limit on the respondent — about two per banker (752 from 345 bankers).

⁹Effects were estimated with standard errors adjusted for autocorrelation between relations described by the same respondent (e.g., Kish and Frankel 1974), and a control for number of colleagues cited. The control for number of citations is needed for two reasons: (1) The senior managers and staff officers were asked for a limited number of trust citations and only one distrust citation, so trust and distrust are less likely from respondents citing more colleagues (note the negligible association with distrust for the bankers and significant negative associations for senior managers and staff officers). (2) Third-party ties are measured by the sum of indirect connections which can be larger for respondents who made more citations. Burt and Knez (1995, 1996) present similar logit results on the senior managers using the alternative control of measuring third-party ties in terms of proportional strength relations. Another option, less useful in empirical research, but demonstrably productive in theoretical work (Raub and Weesie 1990), would be to measure third-party ties by the time required for stories to reach ego.

¹⁰The interaction with weak relationships in table 1, TP x WEAK, is noteworthy with respect to reputation. The enforcement mechanism invoked in closure arguments is substantively important because it purports to show the rationality of trust between people who have little or no history with one another. The presence of third parties means that each person can rely on the other not to be abusive because doing so would diminish one's reputation with the observing third parties. Structuring an organization to create third-party ties is thus a strategy for encouraging cooperation between

colleagues for whom cooperation has no short-term gains. The weak relationships cited by senior managers and staff officers in figure 2 are like the negative relations cited by the bankers in showing little evidence of trust (and no significant third-party effects on trust in table 1). Trust is inhibited by emotional distance between respondent and colleague regardless of third parties connecting the two people. However, the weak banker relations are weak in duration, not emotion. They are relations new to this year's peer evaluations, and as predicted by the enforcement mechanism, trust is significantly more likely in those of the new relationships embedded in strong third-party ties (6.8 test statistic).

¹¹I am grateful to Martin Gargiulo for the point that third-party ties might measure respondent time with the colleague. Correlations are given below for the variables in the text. The first four are in table 1. Frequency distinguishes between (4) daily contact, (3) weekly, (2) monthly, or (1) less often. Duration is years known. Correlations below the diagonal are for the managers and above are for the staff officers.

trust	distrust	direct	indirect	frequency	duration
—	—	—	—	—	—
—	-.196	.531	.092	.171	.372
-.123	—	-.381	-.162	-.256	-.106
.359	-.403	—	.177	.374	.293
-.037	.192	-.314	—	.205	.155
.130	-.146	.345	-.060	—	-.020
.145	-.054	.148	.019	-.143	—

¹²I do not know the density of citations to other divisions because I do not know the number of colleagues at risk of being cited. However, I know that 431 colleagues were cited in other divisions. There are 148,695 possible relations from the 345 bankers to the 431 outsiders, of which 4,357 were cited, defining a 3% density of citations to outsiders. The 3% is higher than the true density because there are more than 431 colleagues in other divisions who could have been cited, but 3% is significantly lower than the 7% density among the bankers (-21.3 logit z-score, $P < .001$; and a -21.2 z-score if I hold constant each respondent's number of citations for the increased odds of citing insiders and outsiders)

¹³This statement is based on logit models predicting trust and distrust from strength of last year's relationship and number of colleagues cited (first rows of table 2), then adding to the predictors the total number of third parties to the relationship (positive third-party ties plus negative third-party ties in table 2) and the extent to which positive exceed negative third parties (number of positive minus number of negative). The z-score test statistics are 19.9 and 9.9 for the third-party sum and balance respectively in predicting trust, 21.9 and -4.8 respectively in predicting distrust. A balance toward positive third parties increases the probability of trust and decreases the probability of distrust, but both effects are weaker than the increased probability of trust and distrust with the sum of positive and negative third-party ties.

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Figure 2. Amplified Trust and Distrust

Number of relations embedded in (weak, strong) third-party ties are reported in parentheses.

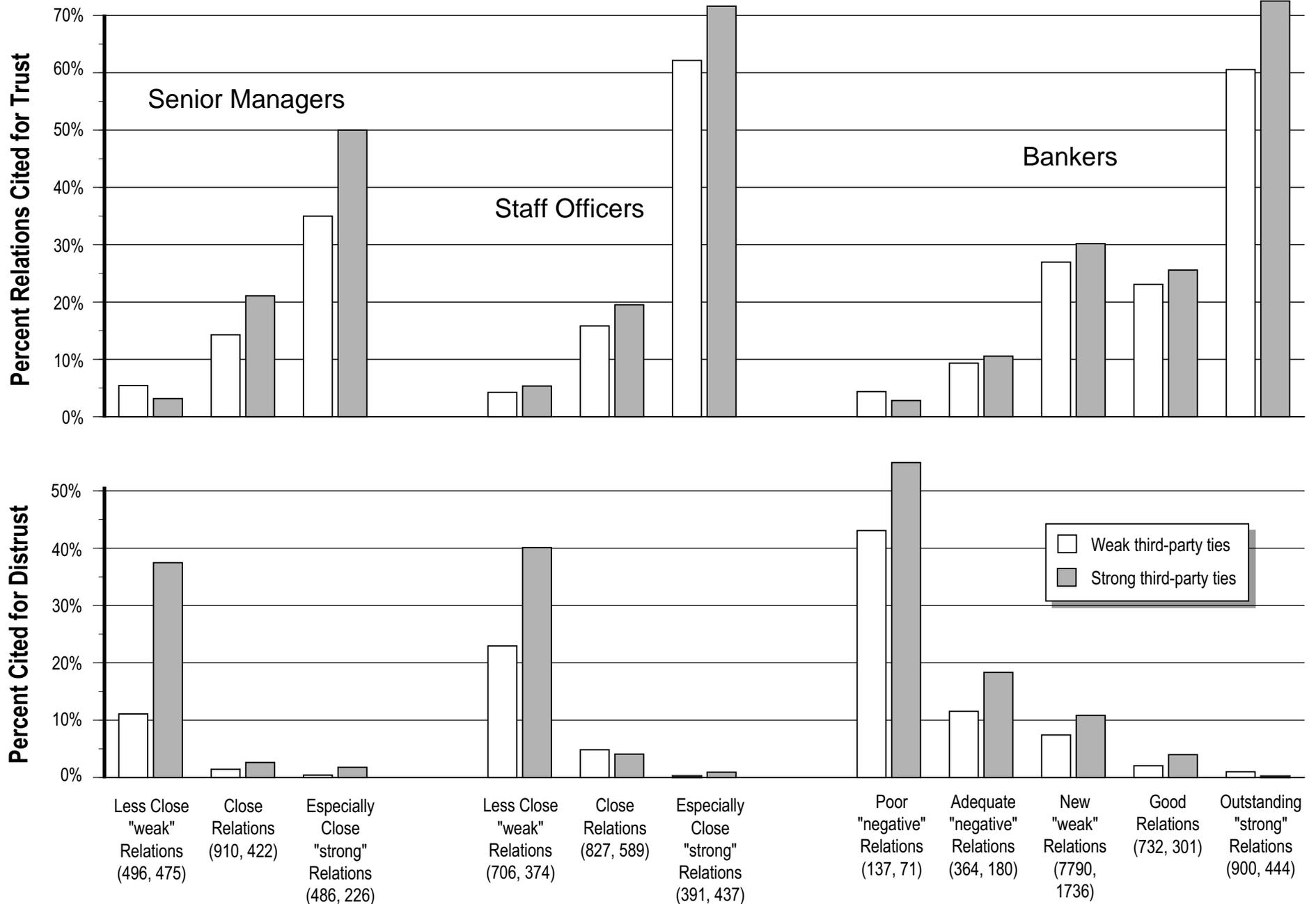


Figure 3.

Colleague Relationships Are Balanced in Intensity, not Direction

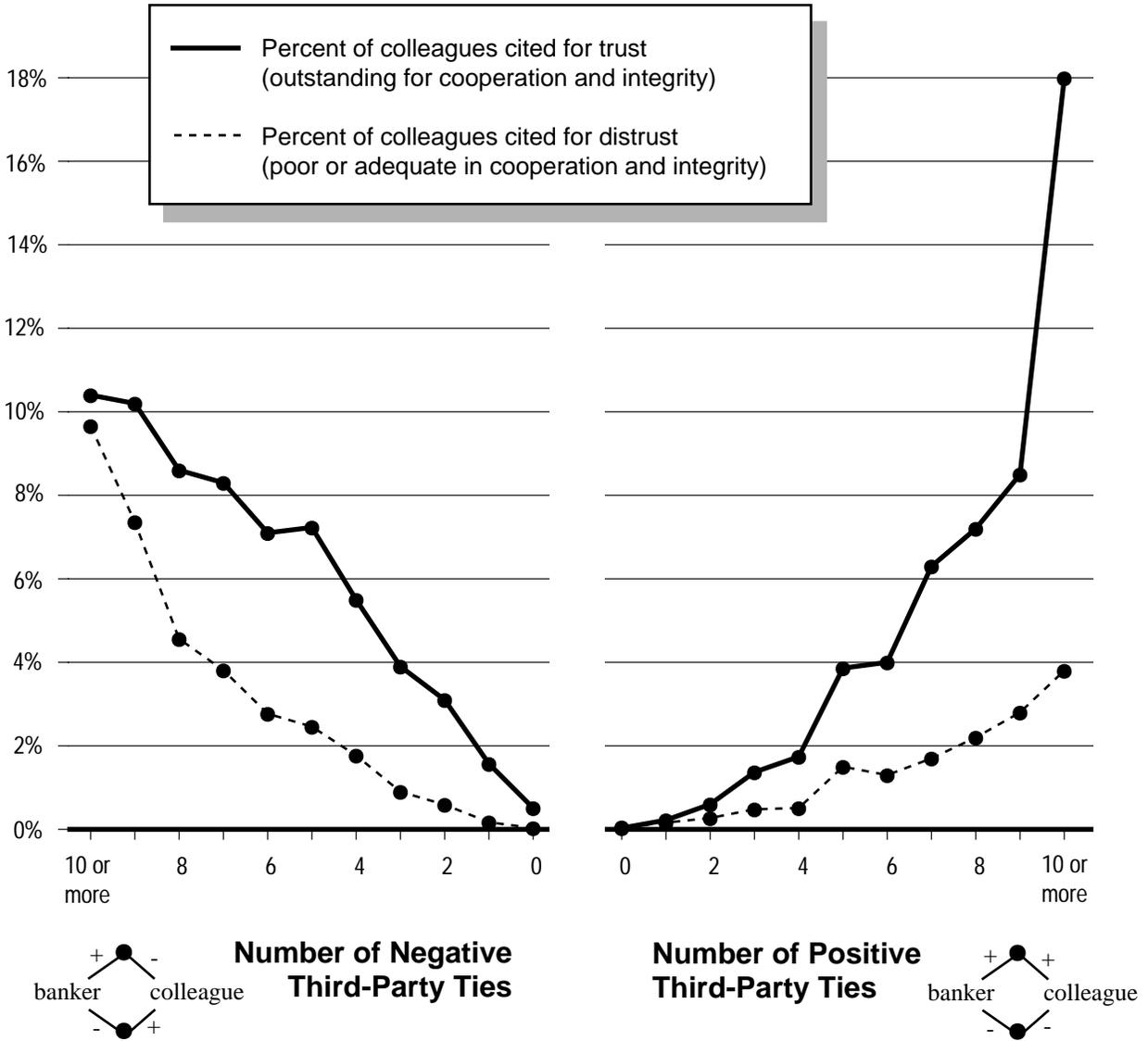


Table 1. Amplified Trust and Distrust

	Trust			Distrust			Standard Deviations		
	Managers	Officers	Bankers	Managers	Officers	Bankers	Managers	Officers	Bankers
Intercept	-2.983	-2.961	-1.240	1.603	.978	-2.683			
Strength of Relationship	2.966 (7.5)*	4.013 (6.7)*	1.260 (9.3)*	-5.516 (-8.4)*	-5.118 (-3.5)*	-1.7059 (-8.5)*	.294	.293	.377
Number of Colleagues Cited	-.033 (-1.4)	.044 (2.2)	-.005 (-1.5)	-.252 (-8.7)*	-.106 (-3.9)*	.003 (0.8)	2.471	3.554	31.874
Strength of Third-Party Tie (TP)	-.556 (-2.1)	-3.458 (-5.5)*	-.031 (-1.4)	.322 (0.8)	-.949 (-1.0)	-.055 (-1.6)	.279	.189	3.191
TP x STRONG	4.382 (2.5)*	3.963 (7.2)*	.173 (8.8)*	6.502 (1.5)	-1.145 (-.8)	-.112 (-1.4)	.049	.227	2.223
TP x WEAK	-.541 (-1.1)	-3.539 (-1.0)	.160 (6.8)*	1.018 (3.0)*	4.095 (2.6)*	.071 (2.2)	.425	.085	3.067
TP x NEGATIVE	—	—	.043 (0.8)	—	—	.156 (2.5)*	—	—	.915
Chi-Square d.f.	333.72* 5	358.34* 5	621.99* 6	333.72* 5	288.04* 5	461.99* 6			

NOTE — These are logit coefficients (test statistics in parentheses are z-scores adjusted for autocorrelation between relations cited by the same respondent). Estimation is across 3,105 relationships cited by the senior managers, 3,324 cited by the staff officers, and 12,655 cited by the bankers. Relationship strengths are distinguished in Figure 2 (and is strength last year for the bankers). Strength of third-party tie is the aggregate magnitude of indirect connections through third parties ($TP = \sum_k |z_{ik}z_{kj}|$, $k \neq j, i$, where z_{ik} is the relation from i to k). * $P < .01$

Table 2. Trust, Distrust, and Directed Third-Party Ties

	Trust					Distrust				
	I	II	III	IV	V	VI	VII	VIII	IX	X
Intercept	-5.951	-4.970	-4.959	-4.955	-4.966	-6.527	-6.179	-6.217	-6.134	-6.232
Strength of Relationship Last Year	3.077 (22.7)*	4.748 (42.1)*	3.373 (22.2)*	4.677 (39.4)*	4.609 (39.3)*	-3.069 (-11.7)*	-3.885 (-13.7)*	-4.538 (-14.9)*	-3.744 (-12.5)*	-4.559 (-15.9)*
Number of Colleagues Cited	-.006 (-2.3)	.015 (7.0)*	-.006 (-1.9)	.014 (5.9)*	.011 (4.8)*	-.001 (-0.2)	.012 (2.3)	.012 (3.2)*	.012 (2.3)	.013 (3.3)*
Positive Third-Party Ties	.440 (32.2)*	---	---	---	---	---	---	---	---	---
Negative-negative	---	.124 (3.1)*	---	---	---	---	.503 (8.5)*	---	---	---
Positive-positive	---	---	.231 (18.1)*	---	---	---	---	.104 (9.7)*	---	---
Negative Third-Party Ties	---	---	---	---	---	.442 (24.6)*	---	---	---	---
Negative-positive	---	---	---	.118 (4.1)*	---	---	---	---	.240 (4.8)*	---
Positive-negative	---	---	---	---	.210 (8.3)*	---	---	---	---	.274 (13.3)*
Chi-Square	3048*	1967*	1279*	1846*	1920*	1292*	379*	550*	285*	681*
d.f.	3	3	3	3	3	3	3	3	3	3

NOTE — These are logit coefficients (test statistics in parentheses are z-scores adjusted for autocorrelation between relations from the same respondent). Estimation is across all 188,680 relations among the 345 bankers. Relationship strengths are distinguished in Figure 2. Third-party ties are counts as illustrated in Figure 3; for example, “Negative-positive” is for the banker i to banker j relationship a count of how often banker i made a negative evaluation of a colleague who made a positive evaluation of banker j. * P < .01