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Table 14.2 is included at the end of the text.

## **STRUCTURAL HOLES**

### **CAPSTONE, CAUTIONS, AND ENTHUSIASMS**

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**ABSTRACT:** This is an overview of the foundation for, and substance of, emerging research on network broker behavior, research that constitutes a second generation of work on network brokerage. I begin with a capstone of key past results along with my cautions and enthusiasms about directions in which things are going. I discuss the information breadth, timing, and arbitrage advantages of network brokers, and returns to those advantages contingent on a broker's social standing. Research linking network structure with success has been a first generation of work. That work is well advanced, but far from complete. I discuss the current position becoming stronger and broader with replication, attention to negative results, and attention to dynamics. Shifting to an exciting second generation of work, research has emerged focused on the behavior by which broker advantage is linked with success. I discuss framing and frame shifts, the importance of personal engagement, the uncertain moderating effects of culture and personality, and a few behavioral variations in brokerage. I discuss the context dependence of *tertius gaudens* tactics *iungens* versus *separans*, and the distinction between brokers who consume versus produce emotional energy in their colleagues.

**KEY WORDS:** Structural hole, network broker, brokerage, status, framing, emotional energy

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Adjunct to the preceding excerpt from *Structural Holes*, this chapter's goal is to provide a capstone summarizing where we are on *Structural Holes*' subject of network brokerage, and my cautions and enthusiasms concerning directions in which things are going. I focus on core ideas and results rather than on literature.<sup>1</sup> In the capstone, I discuss the information breadth, timing, and arbitrage advantages of network brokers, and returns to those advantages contingent on a broker's social standing. Research linking network structure with success has been a first generation of work. That work is well advanced, but far from complete. I discuss the current position becoming stronger and broader with replication, attention to negative results, and attention to dynamics. Shifting to an exciting second generation of ongoing work, research has emerged focused on the behavior by which broker advantage is linked with success. I discuss framing and frame shifts, the importance of personal engagement, the uncertain moderating effects of culture and personality, and a few behavioral variations in brokerage. I discuss the context dependence of *tertius gaudens* tactics *iungens* versus *separans*, and the distinction between brokers who consume versus produce emotional energy in their colleagues.

## CAPSTONE

Cumulating through the final decades of the twentieth century, the concept of network brokerage in *Structural Holes* emerged from the work of several people, all building on a foundation of two facts established during the 1950s "golden age" of social psychology such that the structure of social networks can proxy the

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<sup>1</sup>I cannot do justice here to the many productive bits of published research available. For literature, see Stovel and Shaw's (2012) review arguing that brokerage should be a more central concept in sociology, and Halevy, Halali, and Zlatev's (2019) broad discussion of texts. For comprehensive current review, see Kwon et al. (2020). Portions of my capstone are adapted from broader introductions to the theory for other audiences: Burt (2010) for management, Burt, Kilduff, and Tasselli (2013) for psychology, Burt and Soda (2017) for strategy, and Burt (2019a) for entrepreneurship.

distribution of information (especially Festinger et al. 1950; Asch 1951; Leavitt 1951; Katz and Lazarsfeld 1955): (1) people cluster into groups as a result of interaction opportunities defined by the places where people meet; and (2) communication is more frequent and influential within than between groups such that people in the same group develop similar behaviors and beliefs. Within their group, people tire of repeating arguments and stories explaining why they believe and behave the way they do. They invent phrasing, opinions, symbols and behaviors that define what it means to be a member of the group. Beneath familiar arguments and experiences are new, emerging arguments and experiences awaiting a label, the emerging items more understood than said. What was once explicit knowledge interpretable by anyone becomes tacit knowledge meaningful primarily to insiders. With continued time together, information in the group becomes “sticky” – nuanced, interconnected, implicit meanings difficult to understand in other groups (Von Hippel 1994). For reasons of a division of labor in which groups specialize on separate bits of work, or variation due to the independent evolution of separate social groups (Salganik et al. 2006) — holes tear open in the flow of information between groups. These holes in the social structure of communication, or more simply “structural holes,” are missing relations indicating where information is likely to differ on each side of the hole and not flow easily across the hole. In short, clustering in social networks is a proxy for the distribution of information in a population, indicating where information is relatively homogeneous (within group) and where information is likely heterogeneous (between groups).

———— Figure 14.6 About Here ————

For example, Figure 14.6 is a sociogram of the social network among senior leaders in a large European healthcare organization. Each symbol is a person. Lines between symbols indicate relationships between people. People are close together in the sociogram to the extent that they have a strong connection with each other and with the same colleagues (spring embedding algorithm, Borgatti 2002).

Note the clusters. To the east in the sociogram, company leaders in the United States are strongly connected with one another with little connection overseas. To the northeast in the sociogram, company leaders in Asia are strongly connected to one another with little connection outside Asia. To the southeast in the sociogram, an important group in the company's research and development operations floats cut off from the rest of company leadership. Business practice varies between the clusters. People in the R&D cluster are guided by state-of-the-art scientific practice. They explain and describe their activities in terms of science. People in the American cluster are adapted to American legal code, business practice, and local institutions. Similarly, people in the Asian, European, front office, and back-office clusters are efficient with their local language, within the social and professional institutions associated with each cluster.

### **Breadth, Timing, and Arbitrage**

The connections between groups in Figure 14.6 are "bridge" relations. A bridge in graph theory is a link that connects two people who cannot otherwise be connected, but it is customary to discuss as bridges any connection between groups unlikely to otherwise coordinate with each other. The people labeled "Bill" and "Bob" in Figure 14.6 have come to be termed "network brokers" (along with several others identified by the letter "B" in the figure) and their network behavior "brokerage." Characterized by their location in social structure, network brokers correspond to Merton's (1949; Gouldner 1957) "cosmopolitans," Katz and Lazarsfeld's (1955) "opinion leaders" (see Burt 1999, 2005, pp. 84-86, on network brokers versus opinion leaders), and, more distantly, Schumpeter's (1911) and Hayek's (1937, 1945) touchstone images of what it means for a person to be an entrepreneur (Burt 2005:Chp. 5, for details; and compare Stigler's 1961:216, image of "specialized traders" in the economics of information).

Network brokers like Bill and Bob have three information advantages over people who do not have bridge connections: breadth, timing, and arbitrage. With respect to breadth, Bill and Bob's bridge relations across groups give them access to more diverse information. Bob looking at European operations can see where certain practices in America could be an improvement. Bill looking at European operations can see where certain practices in Asia could be an improvement. With respect to timing, Bill and Bob are positioned at crossroads in the flow of information between groups, so they are early to learn about activities in other groups and are often the person introducing to one group information from another. There is no one other than Bob and Bill positioned to look at European operations through an American or Asian lens. Bill and Bob are more likely to know when it would be rewarding to bring together separate groups, which gives them disproportionate say in whose interests are served when the contacts come together, which brings in arbitrage: Network brokers have an advantage in translating opinion and behavior familiar from one group into the dialect of a target group. Bob and Bill can express their proposals from overseas in terms familiar to their European colleagues.

The information advantages are less about getting novel information than they are about applying novel interpretations to existing information and combining previously disparate bits of information into novel interpretations. For one thing, technology continues to expand our exposure to information such that getting information is not as difficult as making sense of information. Second, the benefit of access to structural holes does not come from indirect access. It comes from direct access to disconnected people (Burt 2010). It is one thing to hear about diverse knowledge and practice that defines an opportunity.<sup>2</sup> It is quite another to recognize

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<sup>2</sup>Given information linked with social structure (relatively homogeneous within groups and heterogeneous between), it is often assumed that people with networks rich in structural holes have access to more diverse information. The assumption simplifies research by

and develop the opportunity (Soda, Tortoriello, and Iorio 2018). Diverse information is readily available from professionals, social media, or word of mouth. It is easy to look up a business concept in Wikipedia and cite a reputable article on the concept. It is quite another to know the concept well enough to transform it into terms familiar to a target audience. Experience coordinating people with different understandings develops one's talent for converting and synthesizing information between groups. People behaving as network brokers develop skills of analogy, metaphor, and simile. They develop tolerance for ambiguity, for conflict between contrasting colleague understandings, for seeing when the time is ripe to propose a new combination of knowledge or practice. In short, the social capital of brokering structural holes is a kind of forcing function for human capital (Burt, 2010). Relative to a person who has spent all their time in a single business function, a person connected to multiple business functions is more likely to see a novel solution that integrates or synthesizes knowledge and practice across functions — or industries, countries, products, or channels.

Skills developed in association with broker behavior enhance creativity. To their European colleagues, for example, Bill and Bob are likely to appear creative. The European colleagues are not familiar with American or Asian operations, so good ideas articulately proposed by Bill or Bob (from their contacts overseas) look like

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alleviating the need to measure information directly. In studies that do measure information, networks more closed tend to contain information more homogeneous (Rodan & Galunic 2004; Zaheer & Soda 2009; Aral & Van Alstyne 2011; Soda, Mannucci & Burt In Press). Network diversity is only an indicator of information diversity, and it is difficult to imagine a measure of information diversity that captures all diversity, so studies typically report success associations with both measures of structural diversity as well as information diversity. Nevertheless, it seems safe to say that network brokers have access to more diverse information, but allow for the risk of false negatives — Aral and Van Alstyne (2011) report that even when network and information diversity are correlated (.71 in their data), people with a closed network in which diverse information is exchanged can also show some of the success associated with network brokers (Brashears & Quintane 2018 unpack components in Aral & Van Alstyne's argument).

creative innovations to their European colleagues. For example, suppose that Bob and Jim in Figure 14.6 have the same idea for an entrepreneurial spin-off from the organization. Jim knows how to express the idea in terms of American operations. The more nuanced the idea, the more embedded in American operations, and the more different the American versus European operations (as indicated by the structural hole between the two in Figure 1) — the less successful Jim will be in explaining the value of the idea to potential investors at the European headquarters. Jim can explain in terms of American operations. Bob, by being embedded in European operations and familiar with American operations, is better positioned to explain the value of the idea in terms familiar to potential investors at headquarters.

Network brokers are expected to create in a target group good ideas adapted from broker familiarity with other groups (Burt 2000: 362-367; 2004). The expectation has empirical support. Network brokers score high on creativity when creativity is measured by supervisor summary opinion of a subordinate's work (Perry-Smith 2006; Jang 2017; Carnabuci and Quintane 2018), by executive opinion of a middle manager's best idea for improving the organization (Burt 2004, 2005, Chap. 2), or by external critical opinion of final product (Fleming and Marx 2006; Fleming, Mingo, and Chen 2007; deVaun, Vedres, and Stark 2015; Soda, Mannucci, and Burt 2021).

Of course, creating a valuable product is a process, not an event. Good ideas morph as they wind their way through colleagues and technical constraints from inception to delivery. What begins as a good idea finishes as one of many possible implementations, the original idea subject to re-framing or re-imagining each step along the way (see Lingo and O'Mahony 2010; Rahman and Barley 2017; Barley, Treem, and Leonardi 2020, for illustrative detail, Latour 2008:5 for the succinct phrasing that design "is never a process that begins from scratch: to design is always to redesign"). Network advantage at the beginning and end of the creative process is likely advantage at critical decision points during the process (Stuart and

Sorenson 2007; Sorenson and Stuart 2008; Perry-Smith and Mannucci 2017; though good ideas seem to be used to impress friends more often than improve operations, Burt 2004: 389-394).

In sum, structural holes in a network are potentially valuable contexts for action, brokerage is the act of coordinating across a hole via bridges between people on opposite sides of the hole, and network brokers are the people who build the bridges and become more able brokers as they gain experience with diversity in their immediate social environment. Brokers operate somewhere between the force of corporate authority and the dexterity of markets, building bridges between disconnected parts of markets and organizations where it is valuable to do so, translating what is known here into what can be understood to be valuable over there. Network brokers are the social mechanism that clears a sticky-information market.

### ***Structural Holes Redux***

I believe that *Structural Holes* played three roles in the above discussion of how network brokerage provides advantage.<sup>3</sup> The first was conceptual in codifying the emerging focus on disconnection rather than connection. A bridge relationship is at once two things: a connection and a disconnection spanned. Many people in the 1970s and 1980s were focused on the advantages of weak ties, following Granovetter's (1973) invigorating discussion. *Structural Holes* proposed that weak ties are only valuable when they are a bridge, that bridge value is less about the bridge than it is about the chasm spanned by the bridge, and that strong bridges are

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<sup>3</sup>There are other ideas in *Structural Holes* that I thought valuable — links between structural holes and Hannan and Freeman's population ecology, Harrison White's image of markets, Commons' and Coase's theory of the firm, and concepts of personality — but constituencies did not develop around the other ideas. Some qualities in one's children are only appreciated by their parents.



probably better than weak.<sup>4</sup> This proposal was informed by Schumpeter's (1911) image of an entrepreneur and Simmel's (1922) image of the *tertius gaudens*, but more concretely by Freeman's (1977) "betweenness" concept of advantage from being the exclusive communication channel between otherwise disconnected people, Burt's (1980, 1982) concept of disadvantage from network constraint measuring interconnected suppliers and buyers, and Cook and Emerson's concept of advantage from having multiple exchange partners (e.g., Cook and Emerson 1978; Cook et al. 1983).

A second role for the book was metaphorical — an intellectually minor item, but consequential in its own way. *Structural Holes* sketched an image of people who create value by bridging structural holes. They were initially termed "network entrepreneurs," subsequently shortened in the literature to "network brokers." The metaphor became popular and cut across the details of alternative measurement strategies, facilitating cumulation across studies.

A third role was empirical. The book's evidence on industries and managers showed success systematically increasing with the brokerage opportunities provided by access to structural holes. Subsequent studies have shown the success-brokerage association to be robust, but also contingent in that appropriate social

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<sup>4</sup>The strong bridge point refers to measurement in *Structural Holes*. Ego is less constrained and has larger effective network size when ego's strongest connections are with contacts disconnected from others in ego's network. I discuss the shift away from weak ties as bridges in *Structural Holes* (Burt 1992: 29) and in a history of brokerage as social capital (Burt et al., 2019:13-21; cf., Borgatti and Halgin, 2011). Empirically, bridges tend to be weaker than connections within groups, but not always, and strong bridges can be more valuable than weak for moving information from one social cluster to another for coordination (Uzzi 1996; Tortoriello & Krackhardt 2010; Aral & Van Alstyne 2011; Tortoriello, Reagans & McEvily 2012), diffusion in general (Burt 1999, 2010, pp. 353-361; Reagans & McEvily 2003; Centola & Macy 2007; Tortoriello et al. 2012; Masuda et al. 2018), or job search in particular (Bian 1997). In fact, strong-tie bridges are essential to the value of *guanxi* relations (Bian 2019; Burt & Burzynska 2017; Burt & Opper 2019).

standing is essential to successful brokerage. In my teaching, I treat these two empirical facts as the first and second rules of social capital.<sup>5</sup>

———— Figure 14.7 About Here ————

The robust nature of the success-brokerage association is illustrated in Figure 14.7 with data on a few thousand managers and executives. Relative success is measured on the vertical axis as a residual z-score after controlling for non-network success factors in each population (e.g., job rank).<sup>6</sup> A score of zero indicates a manager whose success is what would be expected in his or her study population for someone with his or her characteristics. Positive numbers indicate managers ahead of expected. Negative numbers indicate managers below expected. To the left on the horizontal axis are the network brokers, people whose networks reach across the structural holes separating groups (illustrated by the sociogram of a person's network below the left side of the horizontal axis). To the right are people embedded in a closed network of strongly interconnected colleagues (illustrated by the sociogram at the bottom right of the horizontal axis). The network metric across the horizontal axis is the network constraint index in *Structural Holes*, which measures the extent to which a person's social contacts are limited to one group. The data plotted in Figure 14.7 are average values of the horizontal and vertical axes within five-point intervals on the horizontal axis within each study population. The triangles

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<sup>5</sup>The third, and final, rule is outside the scope of this chapter but worth mentioning because it is an essential component in network governance that was ignored in *Structural Holes*: the third rule, a "closure" rule, is that closed networks facilitate trust and collaboration by creating reputation costs for bad behavior (Burt 2005: Chps. 3-4 for review). As Coleman (1988:S107) succinctly put the matter: "Reputation cannot arise in an open structure." As illustrated below in Figure 14.8, the social standing created and maintained in closed networks is critical to successful brokerage. Governance is exercised when a person's bad behavior lowers the person's social standing, which lowers the returns to the person's brokerage.

<sup>6</sup>Success factors held constant within each population to measure relative success are described in published articles listed with the source figure in Burt (2019b). I here add to the source figure data from a 2018 area probability sample of 384 Chinese entrepreneurs (controls given in Burt & Opper 2019:Figure 9).

describe thirteen hundred managers in Asia, primarily China. The hollow squares describe a thousand managers in Europe. The solid circles describe two thousand managers in American companies. As predicted by network theory, and reported in published studies of the study populations, a manager's relative success decreases as his or her network becomes more closed. More, the pattern is strikingly similar in the three regions: -.75 partial correlation in the U.S., -.73 in the E.U., and -.78 in Asia (see Burt, Reagans, and Volvovsky, 2021, for similar pattern when people are assigned at random to networks).

———— Figure 14.8 About Here ————

Contingency is illustrated in Figure 14.8. The benefits of access to structural holes go disproportionately to people with high social standing — as indicated by high job rank in Figure 14.8A,<sup>7</sup> high network status in Figure 14.8B,<sup>8</sup> political

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<sup>7</sup>Graphs in Figure 14.8 are the same as the one in Figure 14.7, but contingency is highlighted. For each graph, an individual's annual compensation is predicted by the following (plus intercept and residual terms):  $\alpha S + \beta(\log C) + \lambda S(\log C) + \sum_k b_k X_k$ , where, S is a binary variable distinguishing people with high social standing in Figure 14.8, C is network constraint on the horizontal axes in Figure 14.8, and various success factors  $X_k$  in the population are held constant. Beta measures the cost of network constraint to people with low social standing (dashed lines in Figure 14.8), and lamda ( $\lambda$ ) is the expected negative adjustment for people with high social standing showing a stronger success-brokerage association for people with higher social standing (solid line in Figure 14.8) versus people with lower (dashed line). Figure 14.8A describes compensation to supply-chain managers in a large electronics company, holding constant job function, age, education, division, and geographic location (Burt 2004:371). Of the five job ranks distinguished in the analysis, the bottom two are distinguished here as low. Repeating the prediction in the original analysis but now with level and slope adjustments for S, the success-brokerage association is negligible for managers in the bottom two ranks (0.50 t-test for beta,  $P \sim .61$ ) and substantial for managers in the higher ranks (-4.88 t-test for lambda,  $P < .001$ ).

<sup>8</sup>Continuing the previous footnote, Figure 14.8B describes compensation to HR officers in a commercial bank and managers in a large software company holding constant job rank, age, gender, function, years with company, and geography (Burt 2010: Chps. 3-4, for prediction; Burt & Merluzzi 2014, for contingency). People with above-median network status scores for their population are treated as having high status (eigenvector measure of status, Podolny 2005). Removing compensation differences associated with the control variables and difference between the two companies, the success-brokerage association is negligible for people with low status (-0.15 t-test for beta,  $N = 541$ ,  $P \sim .88$ ) and significant for people with high status (-7.77 t-test for lambda,  $P < .001$ ).

connection in Figure 14.8C,<sup>9</sup> and insider status in Figure 14.8D. The contingency is dramatic. A bold line through the solid dots in each graph shows steep returns to brokerage for people with high social standing. A dashed regression line through the hollow dots in each graph shows no returns to brokerage for people with low social standing — except in Figure 14.8D, which illustrates the extreme case of people with so little social standing they are punished if they try to behave like a broker (delayed promotions to broker women and junior men in the company from which the data in Figure 14.8D were obtained).<sup>10</sup>

Success-brokerage contingency has been interpreted in two ways: in terms of the broker, and in terms of the broker's audience. Initial results on job rank attributed contingency to ego's work autonomy. People who have more control over the direction and substance of their work (senior business leaders, academics and other professionals, artists and other creatives, etc.), can benefit more from the breadth, timing, and arbitrage advantages of access to structural holes (Burt 1992:138-140;

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<sup>9</sup>Continuing the previous two footnotes, Figure 14.8C describes relative business success in a stratified probability sample of 700 Chinese entrepreneurs holding constant industry, city, and characteristics of the business (Burt & Opper, 2020:1218). Politically connected are distinguished from disconnected, with a middle category of entrepreneurs neither especially connected, nor disconnected. With controls from the original analysis, the success-brokerage association is negligible for politically disconnected entrepreneurs (0.57 t-test for beta,  $P \sim .57$ ) and substantial for politically connected entrepreneurs (-3.00 for lambda,  $P \sim .003$ ).

<sup>10</sup>Continuing the previous three footnotes, Figure 14.8D describes age at promotion to senior rank in a computer company holding constant manager job rank, function, location, education, and seniority (Burt 1992:126-131). Analysis revealed that women in all ranks, and men in the most junior of the senior ranks, suffered promotion delay when they had a network rich in structural holes. Repeating the prediction in the original analysis, but now with level and slope adjustments for S (a dummy variable distinguishing senior men), the success-brokerage association shows delayed promotions for women and junior men who are network brokers (2.32 t-test for beta,  $N = 284$ ,  $P \sim .02$ ) while promotions to senior men are delayed when they are not a network broker (-5.27 t-test for lambda,  $P < .001$ ). Casual readers of Figure 14.8D in the source article often infer that women and junior men in all organizations are denied the benefits of network brokerage. The inference is incorrect. Disadvantage is specific to a study population at the time it is observed (on age discrimination, see Burt 2018). Figure 14.8D is an exception, not the rule.

1997). Rider (2009) introduced the argument that contingency is due to audience uncertainty about a would-be broker. Audience uncertainty could be allayed by a broker's high status or positive reputation, so people of higher status or more positive reputation should enjoy higher returns to brokerage. As Rider (2009:578-579) summarizes: "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." The contingencies for manager status in Figure 14.8B, and insider status in Figure 14.8D are consistent with Rider's results and support his audience argument.

The extent to which contingency is due to broker or audience is unknown. Social standing is correlated across the three indicators in Figure 14.8, and contingency on each indicator can be explained as a function of broker or audience. With respect to broker work autonomy, job rank is an obvious indicator, but job rank is also an indicator of authority in an organization, which is akin to high status and positive reputation. With respect to alleviating audience uncertainty about a would-be broker, status and political connection are obvious indicators, but the authority of people in high job ranks also generates less audience uncertainty about proposals than does the lesser authority of people in junior ranks. Distinguishing kinds of people inappropriate to be network brokers (women and junior men in Figure 14.8D) is most obviously due to audience, but here again, long-term exposure to the behavior and stories that insiders use to find community in distaining outsiders can erode the manifest talent and self-confidence of a person deemed an outsider (Burt 2010:216-218).

Absent consensus on why it exists, just knowing the contingency exists is for three reasons almost as valuable as knowing about the general association between success and brokerage illustrated in Figure 14.7. First, attention to contingency is important for cumulating research results across study populations. Low returns to brokerage in populations of people with low social standing can result in negligible

association between success and brokerage being attributed erroneously to non-network characteristics in the population such as personality, industry, or culture (Burt and Batjargal 2019).

Second, contingency highlights the importance of separating ego-network measures from whole-network measures. Ego brokers connections across structural holes in the ego network, but has social standing as a function of his or her status/centrality in the whole network, or reputation within a target audience. Brokerage and social standing are often correlated, but remain conceptually and substantively distinct for research on the two phenomena (Podolny 2001; Everett and Borgatti, 2005; Burt and Merluzzi, 2014). Whole-network measures confound the two phenomena by mixing ego's network centrality with ego's access to structural holes.

Third, contingency creates rigorous network tests for diversity and coordination issues in an organization. People with low social standing do not benefit from brokerage, so a category of people who receive low returns to brokerage is a category of people with low social standing. Negligible or negative returns to brokerage can be used to identify categories of people distinguished by their low social standing in a study population (Figure 14.8D), and estimate the cost to them of their low standing. This research strategy was introduced in *Structural Holes* (Burt 1992:145-163), and elaborated in work testing for diversity issues (Burt 1998; 2000:398-407; 2010:Chp. 7; 2018). I use the strategy in consulting to test for M&A failure (when leaders in an acquired firm are denied returns to brokerage), and successful leadership development (people promoted to leadership positions tend to come from divisions in which people are rewarded for their work as network brokers).

——— Figure 14.9 About Here ———

## CAUTIONS AND ENTHUSIASMS

The ideas and results discussed in the preceding pages are core to a first generation of work on network brokerage. The work links structure with success. To the right in Figure 14.9, some people are more successful in that they are more creative than peers, get better job evaluations, enjoy higher compensation, and are more likely promoted to leadership positions. To the left, structural holes in a network provide brokerage opportunities associated with success (Figure 14.7), contingent on would-be brokers having sufficient social standing to be accepted as a broker (Figure 14.8). Work linking structure and success is well advanced, but far from complete. The strong current position would be stronger and broader with replication, attention to negative results, and attention to dynamics (sketching new brokerage research directions is a strength of the Kwon et al. 2020:1105-1114, review).

### Replication

How does the Figure 14.7 association look in domains other than business (e.g., in politics, nonprofits, academics, the arts and humanities) with respect to kinds of contingency other than the social standing variables in Figure 14.8 (e.g., distinctions by age, culture, personality, race, and so on)? With editors and reviewers asking for “new” theory in research articles, authors often give undue attention to idiosyncratic findings peculiar to idiosyncratic data. Examples are company employees in a specialized job function, students in a particular school or classroom, people affiliated with a particular village or social club. For various reasons, network studies have been prone to clustered respondents (Coleman 1958; Laumann, Marsden and Prensky 1983). Escaping the problem is a strength of ego-network analysis – theory can be tested with probability samples of observations (Fischer 1982; Burt 1984; Marsden 1987, 2011; Opper and Burt 2021). Replication is our protection against spurious generalizations of idiosyncratic results. A result is not an established fact until it is reported in a substantial probability sample from a heterogeneous

population, or in multiple diverse study populations (e.g., Figure 14.7, or evidence from many network analyses by physical scientists for whom evidence diversity seems more familiar, e.g., Watts and Strogatz 1998).

### **Attention to Negative Results**

Galunic, Ertug, and Gargiulo (2012) and Clement, Shipilov, and Galunic (2018) raise the issue of brokerage side effects. Side effects can be positive, and often are, as discussed by Galunic, Ertug, and Gargiulo (2012). For example, the network broker who secures funding for a project not only benefits herself in terms of the positive results in the upper right of Figure 14.9, she also benefits colleagues and employees who will be supported by the project's funding.

But social mechanisms strong enough to create advantage can also have negative consequences. For example, a closed network of connected people is well known to provide trust and collaboration at the same time that it carries the potential for rigidity and groupthink (Burt 2005:Chp. 4, for review). Presumably, the negative results are not sought directly. They are a side-effect — a by-product, an externality, an unanticipated consequence — of people working to build and maintain a trustful, collaborative environment. So too brokerage, with its advantages for success, can create the negative results listed in the lower right of Figure 14.9. We know quite a bit about network governance protecting people from bad behavior (footnote 5), but little exists on systematic negative results from brokerage.

Negative results are sometimes deliberate. Through affiliation with multiple groups, network brokers are relatively free from the social conventions of any one group, which is foundation for brokers being more creative and innovative. A side effect of that freedom is broker recognition of the arbitrary substance of beliefs in different groups. Distance from meaningful, effective social conventions frees network brokers to pursue personal interests, productive or destructive.



As brokers lead productive groups in business, and invisible colleges in academe, network brokers elsewhere lead criminal activity (Morselli and Boivin 2017). Tillman and Indergaard (1999:572) “use network theories to explain how white-collar criminals can position themselves as brokers and exploit a market segment.” McGloin and Piquero (2010) find that delinquents with colleague (co-offender) networks richer in structural holes engage in more diverse criminal activities (which is perhaps why they have networks richer in structural holes). Morselli and Tremblay (2004) report a positive association between earnings and structural holes in the networks around prison inmates involved in market offenses (“drug dealing, fencing, smuggling, loansharking, sex peddling, illegal gambling operating and other supply-related offenses”).

Putting aside deliberate criminal activity, negative results can be anticipated as collateral damage from brokerage. For one thing, brokers drive innovation, which means disruption to current operations (a side effect highlighted by Clement et al. 2018). A plant manager once told me that he did not want his managers “even thinking about new ideas.” The plant was profitable and barely keeping up with current demand. The plant manager’s experience was that new ideas offer at best minor improvement, but guarantee disruption to current operations, which the plant could not afford. More, limited resources mean that neglected projects are a likely by-product of successful brokerage. Brokers are more successful than peers in getting their projects funded, but a manager more effective in communicating the value of a project, might not be advocating the project most valuable to the organization. In court, was the defendant acquitted because he was innocent, or because his lawyer was skilled in packaging the evidence for the jury? In academic research, was this paper published instead of that one because the first was of higher quality, or because the author of the first was a friend of the journal editor?

Aside from disruption and neglected projects to be expected from innovation, there are arguments that attribute colleague costs to network brokers in particular.

Quintane et al. (2019) argue that brokers who coordinate between people who do not interact directly (*separans* brokerage in the below discussion) are more subject to emotional burnout, which can manifest as abusive behavior toward colleagues. Feelings of inequality can be expected among colleagues even as brokers use their information advantages to bring solutions to colleagues. How much inequality is an empirical question to be determined and judged for propriety. Fernandez-Mateo (2007) is an early example of such work. Contingency workers are people who accept temporary jobs, which are often distributed through employment agencies that contract with employers to locate people as needed for temporary jobs. Employment agencies play the role of network broker in this labor market, a market in which contingency workers are at an information and power disadvantage (cf., compradors in trade between Europeans and the Chinese, Bergere 1989; Finlay and Coverdill 2002, on headhunters more generally). Fernandez-Mateo (2007) shows that contingency workers earn more as they gain experience, but staying with the same employment agency leads to the agency keeping an increasing proportion of earnings (Rietveld, Ploog, and Nieborg, 2020, for similar finding at firm level). The finding can be interpreted as a labor portfolio issue in which agency earnings on experienced workers subsidize poor earnings on inexperienced workers. The finding can also be interpreted as broker exploitation (Fernandez-Mateo 2007). Reasonable, contradictory interpretations of earning discrepancy between agency brokers and agency clients highlight a challenge to inference from research on broker externalities: What constitutes broker bad behavior?

The question is made more complex by the ambiguous link between brokerage and bad behavior. On the one hand brokers could be expected to be judged as behaving badly because brokers connect across multiple groups, so they are less constrained by the social norms of any one particular group and are at higher risk of behaving in the social style of one group when they are among members of another group. On the other hand, network brokers score high in self-monitoring,

presumably because they have developed the skill to present a face appropriate to the group they are with (Mehra, Kilduff, and Brass 2001; Sasovova et al. 2010; Kleinbaum, Jordan and Audia 2015). Bringing the two expectations together, Burt and Wang (2019) show that network brokers are more likely to be cited for bad behavior, but the tendency disappears when network size is held constant — network brokers have larger networks, so they are more likely to be cited for positive and negative reasons. The negative correlates of brokerage remain an open question. With our increasing dependence on network brokers to clear sticky-information markets, we are more than ever before dependent on broker ethics. Negative correlates of brokerage are something about which we know too little.

### **Attention to Network Dynamics**

Most evidence of the brokerage-success association is based on cross-sectional data or a few data panels. Preservation of the status quo is a familiar result: Existing relations support adjacent relations as people introduce friends to one another (Feld's 1981, "social foci" model of relations developing between people who spend time together in the same place; Small's 2009, description of childcare centers providing just such a place for strong ties developing between mothers using the same facility), which means the bridge relations distinguishing network brokers decay faster than adjacent relations embedded in closed networks (e.g., Burt 2002 on enduring closure in banker networks; Zaheer and Soda 2009, on enduring closure in TV production teams; Zhang et al. 2015, on re-tweets in Weibo, a Chinese synthesis of Facebook and Twitter). New relationships in particular are supported by embedding (Burt 2002; Burt 2005:203-208), which could result from brokers using bridges as short-term connections while preserving relations with long-term contacts by introducing such contacts to one another (Quintane and Carnabuci 2016). Theoretical models are available describing the distribution of advantage in stable "equilibrium" networks (Goyal and Vega-Redondo 2007, Ryall and Sorenson 2007,

Buskens and van de Rijt 2008, Kleinberg et al. 2008, Reagans and Zuckerman 2008), but the models are pessimistic about individuals maintaining access to structural holes. Still, people muddle through in that the people who have advantaged access to holes today are often the people who had advantage yesterday (Burger and Buskens 2009). Our disconnected empirical results on the network dynamics of brokerage await a coherent story (Chen et al., 2020, for broad review of network dynamics).

### Continuous Time

Archives of digital data allow network dynamics to be studied in ways not possible previously. For example, Fleming and Waguespack (2007) use 17 years of two-mode network data to show that engineers who participate in multiple online working groups (i.e., network brokers) are more likely to rise to leadership positions. Foster et al. (2015) infer from extensive publication records stable scientist dispositions toward seeking rare large reward from innovative brokerage or small likely reward from small variation on established knowledge, and Lutter (2015) uses 91 years of data on actors participating in films together to describe a career-ending disadvantage that accumulates for women who get embedded in projects that constitute a closed network.

Email data look especially promising (Wuchty and Uzzi 2011, is a template for comparing email with sociometric data). Goldberg et al. (2016) use continuous-time email data in an innovative analysis of network structure and language. The authors code ten million email messages spanning five years to measure over time the extent to which the language in a manager's outgoing messages matches language in the manager's incoming messages. The brokerage-success association in their study population is contingent on language. Managers are less likely to be fired, and more likely to receive favorable performance ratings, if they have a network rich in structural holes, but the association is contingent on managers using language that

matches the language typical of their colleagues. In other words, returns to brokerage are contingent on using language that “fits in” (a new indicator of social standing for graphs like those in Figure 14.8).<sup>11</sup> Quintane and Carnabuci (2016) use email data over the course of a year to describe a process of hole decay in which broker employees connect across certain holes, those holes close, then the brokers move to new places in the network. These longitudinal studies help explain why continuing access to brokerage opportunities is evident in earlier studies with more limited data (Zaheer and Soda 2009; Sasovova et al. 2010; Burt and Merluzzi 2016).

In addition to substantive insights, longitudinal data allow more credible causal inference (see Kleinbaum and Stuart, 2014, for exemplary analysis; Jackson, Rogers, and Zenou, 2017:81-86, on network endogeneity more generally). Kleinbaum (2012) uses six years of email data among 30 thousand managers to show that the people most likely to become network brokers emerge from unusual career histories (unusual business units, job functions, and geographic locations), and then uses the data to distinguish the independent effect of rotating into corporate headquarters (Kleinbaum and Stuart 2014): Managers who have worked in corporate headquarters tend to have networks richer in structural holes, an association often attributed to connections created while at headquarters. With the longitudinal email data, Kleinbaum and Stuart show that a substantial portion of the headquarters effect

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<sup>11</sup>Compare Figure 14.8 with corresponding graphs in Goldberg et al. (2016:1207). Tasselli, Zappa, and Lomi (2020) use more usual panel survey data with a more abstract measure of language similarity to make two points that corroborate the foundation for Goldberg et al.’s analysis: Connected managers within a business unit tend to develop similar language, and manager A tends to develop broker ties to manager B in another business unit when A and B use similar language. I am enthusiastic about the Goldberg et al. analysis, but I would have liked to get closer to brokerage by knowing whether their brokers adapt language to different groups, and with what consequence. When language in two groups differs, does broker email language with the first group differ correspondingly from the broker’s email language with the second group? To the extent that brokers are connected to groups that use different languages, and brokerage involves language appropriate to each group (Mehra et al. 2001 on broker self-monitoring), brokers relative to nonbrokers should have wider variation in their language.

is due to people being selected to work in headquarters because they already had networks rich in structural holes.

### Sampling Structural Holes to Study Brokerage

An important feature to the above analyses by Fleming and Wagespack (2007) and Goldberg et al. (2016) is their use of a criterion success variable. To be sure, describing network change is informative in its own right (e.g., Diesner, Frantz, and Carley 2006, on the network structure of Enron email over time), but description alone throws up a lot of detail that can obscure key changes. Popular network metrics such as size, density, reciprocity, transitivity, clustering, or structural hole measures such as betweenness (number of structural holes to which ego has monopoly access) and constraint (ego's lack of access to structural holes) can vary over time by increasing, decreasing, remaining stable, or oscillating up and down.

Having a criterion success measure focuses attention on the few network changes linked to success — of the many changes possible and observed. For example, oscillation between brokerage and closure is one way a person's network can change over time, but Burt and Merluzzi (2016) show that oscillation is particularly important to understand because it is the one change in banker networks that is associated with exceptional compensation. To be sure, knowing that oscillation is associated with advantage does not explain why. Advantage could be due to reputation established while ego spends time in a closed network (Burt 2005:Chp. 4), ego agility in breaking away from inferior solutions (Shirado and Christakis 2017), skills associated with ego ambidexterity in switching between brokerage and closure (Rogan and Mors 2014), or ego maintaining a larger network in which clusters of relations go to sleep for later activation (Levin, Walter, Murnighan 2011). Regardless of the explanation for broker oscillation, success has been a helpful criterion variable for sorting through alternative network models of brokerage (better models predict relative success more accurately). The same criterion

variable should be even more helpful in focusing attention on key changes among the broader diversity of possible changes in network structure.<sup>12</sup>

More than the intrinsic value of understanding network dynamics, ongoing research on broker behavior is disadvantaged by the lack of core results on dynamics. One or two core results on network dynamics could focus research attention on behavior during key moments of brokerage. Absent knowledge of those moments, studies are prone to describing average behavior, which confounds irrelevant action with the few behavioral moves that matter.

To illustrate the point, imagine we could create life-cycle videos of structural holes. For a given structural hole — such as the hole between Asian and European operations in Figure 14.6— assemble the set of people on either side of the hole. Trace the networks around each person in the set back to a time before the hole existed. Trace the networks around each person forward to a time when operations in the two areas are integrated such that the hole has disappeared. Ideally, data would be available such that a video over time could be created in which relations form and dissolve, and people enter and leave, as the hole emerges then disappears. The technology is readily available (Moody, McFarland, and Bender-deMoll 2005). Data collection is the challenge. Continuous-time electronic network data seem best suited to the task. Ethnographic research is a strong alternative for small networks.

———— Table 14.2 About Here ————

With several such videos, one could populate the cells in Table 14.2. Rows distinguish structural holes by how ego sees them emerge. My guess is that the vast

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<sup>12</sup>Although an aside to this chapter, success need not be any less complex than network brokerage. The process of broker behavior leading to success is likely mirrored in a sequence of rewards that culminate in the compensation and promotion rewards associated with brokerage. The reward sequence is likely to begin with the feelings of self-confidence and emotional energy discussed later in this chapter.

majority of structural holes are discovered. We are made aware of them when our social contacts in other groups expose us to a person whose behavior or beliefs we didn't know we didn't know (Quintane and Carnabuci's, 2016, "unembedded interactions"). Structural holes are discovered in workshops, at conferences, in mergers and acquisitions, during travel and immigration, during Zaheer and Soda's (2009) new team assignments, or Kleinbaum's (2012) "unusual" work assignments. Across it all, technology is shrinking the world as groups previously disconnected become aware of one another. An example is the hole between Asian and Europe in Figure 1. The hole exists because it emerged for managers in the European and Asian companies when the former purchased the latter. A life-cycle video of the Asia-Europe structural hole in Figure 14.6 would not show the creation of a structural hole. The hole was always there. The video would show discovery of a pre-existing hole.

Sometimes structural holes are created. In *Structural Holes*, I cite (pp. 30-32) Simmel's example of Incan rulers creating conflict between paired governors of conquered provinces, and Barkey's (1991) description of the Turkish sultan playing governors against bandits to control peripheral provinces. Similarly, brokers can benefit from deepening an existing structural hole, as in Simmel's description of the Venetian doge playing wealthy merchants against established aristocrats to seize land, Coleman's (1957) description of local leaders rising to prominence promulgating community conflict (cf. today's leaders of peripheral interest groups), or the senior U.S. person in Figure 14.6 securing local leadership by deepening the disconnect between American operations and the parent E.U. company.

Discovered versus created are just two categories in a typology of structural holes distinguished by etiology. There are rows to add to Table 14.2 — for example, see Zaheer and Soda (2009) on antecedent correlates of structural holes — but the contrast between discovered versus created seems a productive start to distinguish structural holes as respectively exogenous versus endogenous to broker behavior.



Columns in Table 14.2 distinguish how ego sees structural holes resolve. Some few will be transitory in that they fade away as people broker across the hole, or interests served by the hole dissolve with time. My guess is that the vast majority of structural holes endure. Discovering a hole does not create a bridge across it. Ego can see a structural hole endure for either of two reasons: no one makes an effort to bridge it, or brokerage efforts fail because interests on one or both sides of the hole are served by the continued existence of the hole. The latter are “active” structural holes (versus “passive” holes about which people are indifferent, Burt 2005: 235-240, leaning on Tilly 1998). In Figure 1, leaders in the U.S. organization took pride in their independence from the larger parent company in Europe, with the result that the trans-Atlantic structural hole between the U.S. and E.U. operations is likely to endure. A life-cycle video of the trans-Atlantic structural hole is unlikely to show successful brokerage across the hole — without intervention from legal requirements (E.U. regulations get applied to subsidiaries), bureaucratic authority (E.U. CEO replaces senior people in the U.S. organization), or discovery of a dramatically valuable brokerage opportunity.

My point with Table 14.2 is that studies of brokerage in typical bridge relations are likely to confound irrelevant action with the few behavioral moves that matter. A random sample of bridge relations is most likely to yield bridges in the first row, first column of the table — inconsequential bridges of untried or failed brokerage. I expect a success criterion to reveal different kinds of brokerage behavior successful in the four cells of Table 14.2. Transitory structural holes are likely to result from the *iungens* brokerage described by Obstfeld (2005). Enduring structural holes are likely to be successfully brokered when the broker acts as a middleman, relieving both sides from having to communicate directly, as illustrated in Kellogg’s (2014) description of hospital case workers brokering connections between lawyers and doctors. More, successful brokerage across an enduring active structural hole is

likely to be especially contingent on a would-be broker's social standing, and initial broker behavior (Liefer 1988, on "local action").

### **Broker Behavior**

Given the accumulating evidence of success associated with network structure, an exciting second generation of work has developed on processes by which the structural hole opportunities for brokerage to the left in Figure 14.9 become the success results to the right. The center column in Figure 14.9 lists some areas of work that stand out to me for the abundance, or absence, of work on them.

### Framing and Frame Shifts

Much of a broker's arbitrage advantage lies in seeing events from a perspective different than colleagues. This is "framing" in the long-standing introductory psychology sense that an object can appear to be different things depending on the context in which it is viewed. In the same way that information can become "sticky" within a group (discussed above), the group's frame of reference on events is "sticky" when the frame is taken for granted by people in the group and involves in-group concepts embedded in other in-group concepts (ethnomethodology's "indexical" words). Broker exposure to diverse groups enhances their creativity in some part because they are more able to replace sticky frames of reference with alternatives — to see events from a different perspective. Obvious examples in business are project failures that get re-framed and become lucrative successes (e.g., Pfizer's discovery of Viagra), but re-framing seems likely throughout a project's development (Rahman and Barley 2017). Broker re-framing is taken for granted in research linking network structure to creativity (discussed above), and can be a useful perspective on management (Bolman and Deal 1991; Dunford and Palmer 1995). Illustrative moments can be captured in ethnographic research (Lingo and O'Mahony 2010), historical archives (Collins 2020 on frame-breaking in biblical

descriptions of Jesus), and video clips of management behavior, but I know of no systematic evidence on the mechanism or its correlates.

### Personal Engagement

Personal engagement in Figure 14.9 refers to the importance of brokers having direct personal access to brokered structural holes. For a set of organizations with diverse management networks, Burt (2010) shows that success is correlated with structural holes in ego's network, not the structural holes among friends of friends to which ego has indirect access. Goldberg et al. (2016) show that to benefit from being a broker, a would-be broker needs to mirror in his or her email messages the language of colleagues. Both studies raise questions about people learning brokerage skills. The brokerage results of innovation and career success can be facilitated by exogenous shock such as immigration (Weiner 2016) or executive education (Burt and Ronchi 2007) — but how do the skills develop endogenously? Everyone can access diverse information in print or on the internet. How much does it matter that a broker's diverse information is embedded in social interaction? Two colleagues arguing because they do not understand one another is a stimulus to ego observing that is different from ego passively reading two written texts that contradict one another. Do people develop brokerage skills more rapidly, or more profoundly, by witnessing or experiencing in person the discomfort of communication failure? And how do the skills disappear? If broker skills expand with heterogeneous experience, do they atrophy in former brokers embedded in homogeneous experience?

### Culture and Personality

The jury is still out on culture and personality as behavioral variables moderating the success association with brokerage. To cite an extreme example, Xiao and Tsui (2007) argue that broker behavior violates social convention in China, so there is no success association with networks rich in structural holes. On the other hand, using

data from a large area probability sample of Chinese entrepreneurs in senior job ranks, Figure 14.7 shows that returns to brokerage in China look just like the returns to brokerage in Europe and the U.S. For more nuanced views, Batjargal et al. (2013) argue that the Chinese returns to brokerage they observe might be due to a lack of infrastructure forcing business leaders to rely on personal connections, and Jang (2017) describes how multicultural people, operating as insider and outsider, broker knowledge within teams across cultures (cf. Pachucki and Breiger 2010 on "cultural holes").

The eminently reasonable argument for personality being a contingency factor is that certain kinds of personalities are more likely to engage and be comfortable brokering connections between people, so those personalities should be observed in people with more access to structural holes and higher returns to networks rich in structural holes. Network structure is certainly correlated with personality (Selden and Goodie, 2018 on network correlates of personality five factors), but the performance effects of each are inconsistent (Mehra et al. 2001; Burt 2012). See Tasselli, Kilduff, and Menges (2015) and Tasselli and Kilduff (2021) for broad review. In particular, network brokers are likely to have self-monitoring as a personality characteristic, which means they tend to present themselves differently in different situations or with different groups (Mehra et al. 2001; Sasovova et al. 2010; Burt et al. 2013:537-540; Fang et al. 2015). On a dimension less explored with network data, what kind of person has the temerity to suggest that colleagues look at a situation in a different way? Images of people with emotional energy (see below) and a sense of agency come to mind — such as Rotter (1966) on feelings of internal versus external control (Miller, Kets de Vries, and Toulouse 1982), Seligman (1992) on optimism versus pessimistic learned helplessness (Bono et al. 2013), or Dweck (2006) on people with a growth versus a fixed mindset (Pisapia, Reyes-Guerra and Coukos-Semmel 2005).

### Miscellaneous

The items listed under miscellaneous in Figure 14.9 are issues I raise in my teaching on which research is needed or accumulating. As discussed above, active (versus passive) structural holes are disconnections maintained by the interests of people on one or both sides of the hole, making brokerage more complicated. When a structural hole is embedded in a larger structure, brokerage is complicated by having to negotiate both the disconnect and its connections into the larger structure (MacCormack, Rusnak, and Baldwin 2006, nicely illustrate the point with “propagation costs” in Mozilla’s evolution into Firefox). “Collateral brokerage” refers to brokers who facilitate the independent brokerage of their contacts. The example I use in class is Powell, Pakalen, and Whittington’s (2012) description of biotechnology clusters developing in certain cities rather than others because of the lead organization’s behavior in the cluster. “Network perception” refers to how people see networks, and how the network around them affects what they see. People who do not see structural holes cannot see brokerage opportunity, which raises questions about how important network perception is for successful brokerage. DeSoto (1960) documented perceptual bias by showing that people learn the structure of a network faster when it corresponds to their understanding of network content (for example, symmetric friendships are learned faster than asymmetric ones). Freeman (1992) adapts DeSoto’s design to show that people often erroneously fill in the structural hole between disconnected people who have mutual friends (see Brashears, 2013, for the same finding with more authoritative data), and Janicik and Larrick (2005) combine the DeSoto design with ego-network survey data to show that people with structural holes in their current network are quicker to see the structural holes in new networks. Smith, Menon, and Thompson (2012) make a jump forward in showing that ego’s emotional state affects network perception. People made to feel afraid are more likely to report themselves embedded in the security of a closed network of interconnected friends. Conversely,

closed networks intensify feelings of loss or gain (Burt 2010:Chp. 8) and are associated with ego focused on the present such that ego severely discounts future rewards, future tense drops out of ego's language, and managers give little attention to strategy beyond the next three months (Burt 2017; Opper and Burt, 2021). Janicik and Larrick's (2005) article is also important for introducing new methodology: They combine ego-network variables with observable ego behavior in a game, in their case, ego's behavior in the learning game designed by DeSoto. Combining network data with game behavior need not be limited to campus subject pools or idiosyncratic villages. Simple economic games can be administered to large probability samples of people on whom ego-network data are collected. For example, Burt, Opper, and Holm (In press) have a probability sample of 500 entrepreneurs play a Prisoner's Dilemma game to show that entrepreneurs as ego in closed networks are unlikely to cooperate with strangers, especially if ego's business has been successful (cf. Bar, Ensminger, and Johnson 2009). Combining network data with observable game behavior is a promising way to move beyond paper and pencil self-reports about how ego believes he or she behaves (the importance of which is nicely illustrated by Small, 2017, showing that people confide in casual acquaintances but when explicitly asked say they confide in family and close friends).

### *Tertius Gaudens as Iungens or Separans*

A key early contribution on broker behavior is Obstfeld's (2005) distinction between two kinds of behavior: Brokers can play a role Obstfeld attributed to the *tertius gaudens*, divisively keeping people apart for the broker's interest, in contrast to a role Obstfeld proposed as the *tertius iungens*, bringing people together for mutual interest. Obstfeld (2017:29) later extended the imagery to a purely behavioral definition of brokerage as "behavior by which an actor influences, manages, or facilitates interactions between other actors." But as Kilduff and Lee (2018:NP28) explain in their review of Obstfeld (2017), "In extending the range of brokerage to all

kinds of coordination activity, brokerage is everywhere and anywhere — almost everything managers do is brokerage.” If everyone is a broker, we lose the performance prediction illustrated in Figure 14.7 that depends on network theory distinguishing brokers from non-brokers.

A compromise alternative is to preserve network predictive power while incorporating behavior. Obstfeld’s (2005) contrast can be seen as simultaneously productive and misleading. It was productive in highlighting the structure-behavior distinction inherent in the contrast. More attention needed to be paid, and is being paid, to broker behavior.

The imagery was misleading in two ways. First, all network brokers, structurally speaking, are a *tertius gaudens* — the third who benefits. There is profit even for a person who merely introduces two people to one another. The person is playing the role of leader, and is compensated when successful with respect or at least a “thank you.” Acting like a broker is a claim to leadership, which is evident in the recognition of brokers as emergent leaders in self-governing groups (Burt, Reagans, and Volvovsky, 2021), and broker success contingent on social standing (broker behavior as a claim to leadership is more accepted by target audiences when the broker already has authority, status, or reputation, Figure 14.8). Second, Obstfeld’s *iungens* imagery misrepresents the structural holes argument. The argument, grounded in Merton and Simmel, is that individual freedom increases with the extent to which an individual’s contacts are in different groups; e.g., the upwardly mobile manager grateful that her lower-class relatives and friends live in a town far away from where she now works. Social structure is treated as exogenous (whether or not it is, Burt, 1992:173-180). People are distributed in a social structure of groups separated by structural holes. Ego builds a network of personal contacts upon the structure (akin to Lin’s, 2001, image of networks as social capital, see Burt et al., 2019:chp 2, for comparison). Network metrics then index the extent to which ego’s network spans structural holes between groups. In short, an *iungens*

behavioral distinction applied to the structural holes argument is not about bringing people together versus driving them apart. It is about bringing people together or leaving/keeping them apart.

If we continue wed to Latin terms, the proper terminology for Obstfeld's distinction would be to discuss network brokers by their structural category, *tertius gaudens*, within which there are two broadly distinct subcategories of behavior: bringing people together (*tertius iungens*), and leaving/keeping people apart (*tertius separans*). Driving people apart who are already together would be a third, relatively-infrequent category of unpleasant behavior. Shifting to contemporary language, we could follow Soda et al. (2018) in distinguishing broker behavior that brings contacts together (collaborating) from broker behavior that leaves/keeps contacts apart (arbitrating), or Jang's (2017) related brokerage distinction within teams between "integrating" knowledge across cultures versus "eliciting" knowledge from distant cultures, or Vissa's (2012, esp. pp. 495-497) related brokerage distinction, based on exceptionally thorough research, between "network-enriching" actions that deepen relationships or "network-broadening" actions that add new relationships. I'm sufficiently old-school to prefer the Latin, and *separans* and *iungens* are easily understood terminology (*separans* for the similarity to "separate," and *iungens* for the popularity of Obstfeld's proposal). As do Kwon et al. (2020:1096-1097) in their review, I will discuss broker behavior on an *iungens-separans* continuum (allowing for shades of grey between the two extremes, Quintane and Carnabuci 2016; Furnari and Rolbina 2018).

Whatever labels are used to describe behavior, it is important to keep behavior distinct from personality. A person observed to broker one way or another does not mean the person only brokers the observed way. Behavior is context-dependent. A person confronted with the same social situation again and again can develop an eye for identifying such situations as familiar, and develop a behavioral repertoire appropriate to such situations, but different situations can elicit different behaviors.



For example, Soda et al. (2018: 905) report that 85% of managers prefer *iungens* behavior. But their study population is HR managers in a geographically dispersed company. These are people who work in a shared-service function. HR operations should be consistent across the enterprise (allowing for geographic variation in labor regulation), so it is not surprising that 85% of the HR managers prefer bringing people together to directly coordinate. Their job is to enforce consistent HR rules across disconnected contacts.

The situation is different when disconnected contacts are separated by an active structural hole. For example, Kellogg (2014) reports that coordination between lawyers and doctors in community hospitals is a factor for hospital performance. In low-performing hospitals, case workers tend to have lawyers and doctors coordinate directly with one another (*iungens* broker behavior). In high-performing hospitals, case workers operated as intermediaries to spare the lawyers and doctors contact with one another (*separans* broker behavior), bringing to a lawyer medical information relevant to a case, and bringing to a doctor legal information relevant to the case.

The two tactics are also different with respect to cost. The *separans* tactic asks less of contacts linked through brokerage since the broker is doing the bulk of the work. I expect this tactic from people with more energy, dealing with contacts more reluctant to spend time on coordinating outside their group. A strong indicator of a *separans* orientation for Soda et al.'s (2018:912) HR managers is agreement with the statement: "If I believe it is not essential, I don't introduce people to each other." In contrast, I expect *iungens* tactic from brokers who like to schedule meetings, create a sense of community, and get other people to do the actual work of coordination (e.g., another strong indicator of *separans* orientation for Soda et al.'s HR managers is agreement with the statement: "I believe meetings and open discussions are time consuming.").

Performance was a productive guide in constructing network models of brokerage opportunities, so it seems wise to keep performance in mind when adding behavior to the models. Kellogg (2014) does not report data on the behavior her case workers prefer, but does report that the *separans* behavior of arbitrating between doctors and lawyers is associated with high hospital performance. Elsewhere brokers can be valuable for facilitating direct coordination between contacts (Obstfeld 2005). And preference need not match reward. It is politically correct for Soda et al.'s HR managers to say they prefer *iungens* tactics (85% say they prefer *iungens*), but the managers are in fact rewarded when they use the more efficient, less colleague-intrusive, *separans* tactics (Soda et al. 2018:912).

And one behavior need not be best for all coordination. For example, I might want two people to meet directly (*iungens*) because the project they are to discuss involves more interactive exchange than will likely happen if their discussion is left to email or video. Or, they might be socially insecure such that they need to see agreement from the other before they will commit to joint action. On another project, I might act as an intermediary between two people in their respective organizations (*separans*) because each person has values or priorities that will offend the other person. Or, one or both people might so enjoy getting into details that they will never make progress if they meet. Or, they are so busy, and my project such a low priority, that I will never get them to a joint meeting. Whatever the reason for one or the other, productive broker behavior is context dependent. One is reminded of an early advisory from social psychologist Solomon Asch (1952:61): "Most social acts have to be understood in their setting, and lose meaning if isolated. No error in thinking about social facts is more serious than the failure to see their place and function."

### Emotional Energy Consumed versus Produced

Emotional energy is a dimension to brokerage behavior rarely discussed. By some criteria — self-esteem, initiative in next project, corporate culture — the energy

dimension could be more consequential for participants than the *iungens-separans* contrast. Rob Cross has long worked with colleagues on energy in management networks (Cross, Baker, and Parker 2003), but the work has been used in subsequent years primarily to enhance consulting effectiveness and executive education, so it is understandable that Furnari and Rolbina (2018) turn to a different source for their exploratory discussion of energy in brokerage processes, grounding their discussion in Collins' (2004) concept of emotional energy.<sup>13</sup>

Collins too has a long history of work on the energy associated with interpersonal relations, in fact giving emotional energy a central role in rational choice (Collins 1993; see Kemper 1993, for commentary). Emphasizing the social origins of emotion, Collins' concept of emotional energy is the feeling of confidence, enthusiasm, and initiative that results from playing a role with other people that makes you feel like you are part of something, something that matters, something that makes you feel good about yourself. In Collins' (2004:108-109) words, emotional energy is:

. . . a continuum, ranging from a high end of confidence, enthusiasm, good self-feelings; down through a middle range of bland normalcy; and to a low end of depression, lack of initiative, and negative self-feelings. Emotional energy is like the psychological concept of "drive," but it has a specifically social orientation. High emotional energy is a feeling of confidence and enthusiasm for social interaction. It is the personal side of having a great deal of Durkheimian ritual solidarity with a group. One gets pumped up with emotional strength from participating in the group's interaction. This makes one not only an enthusiastic supporter of the group, but also a leading figure in it. One feels good with the group, and is able to be an energy-leader, a person who stirs up contagious feelings when the group is together. At the low end of the emotional energy

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<sup>13</sup>Do a web search for Rob Cross and energy to locate some useful slide decks and video clips. Baker (2019) provides a broad review of positive sentiments and energy, with notes on measurement, but he does not mention brokerage. Regardless, Baker's discussion is rich in useful leads for analyzing the energy created or consumed by network brokers.

continuum, the opposite is the case. Low emotional energy is a lack of Durkheimian solidarity. One is not attracted to the group; one is drained or depressed by it; one wants to avoid it. One does not have a good self in the group. And one is not attached to the group's purposes and symbols, but alienated from them.

Collins (2004) offers extensive discussion of emotional energy, and Furnari and Rolbina (2018) offer images relevant to brokerage in creative projects (cf., Collins 2020 on T. E. Lawrence as a successful network broker).

However intuitively appealing, emotional energy is a complex variable, so a very little bit of theory can go a long way in guiding empirical research. Consider beginning with a fundamental contrast in the emotional energy associated with brokerage: a contrast between energy consumption and energy production. Some brokers behave in such a way that they consume the emotional energy of colleagues. Colleagues walk away from the broker feeling diminished. Such brokers can be expected to be discussed as selfish, dismissive, indifferent to colleague interests. At the other extreme, some brokers behave so as to produce emotional energy in colleagues. Colleagues walk away from the broker feeling excited and eager to get to work. The high-low emotional energy contrast is not between negative versus positive emotions (though that can matter, of course). The contrast is more precisely between emotions that animate and motivate action, versus emotions that debilitate, thereby eroding interest, impulse, and confidence.

Even this simple contrast of brokers consuming versus producing emotional energy can be complex to disentangle in actual behavior. For example, consider Collins' (2020:117) view of an oft-mentioned Steve Jobs behavioral sequence:

Steve would visit the most advanced work group, look at what they had done, and start criticizing it. His comments were crude, obscene and insulting. We might think his high-tech experts wouldn't stand for this, that they would quit or rebel. But Jobs was not the kind of boss who walks in, shouts at his workers, threatens them if they don't do better, then slams the door and leaves. Steve would insult them until they were really angry; then he would stay and argue with them. His persistence was incredible — he would argue with them for hours. He was famous for dropping in on people and staying up all night arguing and expounding his vision.

Collins then interprets the behavior in terms of emotional energy:

The crucial pattern is in the time-sequence. Steve enters, and forcefully seizes the emotional center of attention. He uses negative emotions to begin with; he gets everyone seething with the same emotion, even if it is anger at himself. He gets them into an intense argument about how the thing they are inventing can or cannot be changed in ways no one has thought of before. Let us say, roughly, twenty minutes of insulting, then hours of heated argument. Over those hours, the emotions settle down; they are no longer focused on Steve and his insults, but about a vision of the piece of computer equipment in front of them, and where they can go with it.

Collins summarizes: “It would be superficial to say that Steve Jobs achieved success by abusing his employees. He used very confrontational tactics to stir up emotions, but his secret was that he never walked away from them: but always saw the argument through to a shared resolution.”

The above is not a behavioral strategy for everyone, nor anyone all the time. It is a surgical strike. One disrupts, creating a sharp drop in emotional energy, then stays on with nurturing engagement to create a net increase in energy. The behavior requires that the broker has high emotional energy, as well as high social standing among the colleagues being brokered. I’ve known senior professors who work with junior scholars in just such a way, but the young person needs to have considerable self-confidence to survive the initial exchange. Suffice it to say that the behavioral sequence producing emotional energy can be complex.

## **THEMATIC CLOSE**

My goal in this chapter has been to provide a capstone summarizing where things are on *Structural Holes*’ subject of network brokerage, and to sketch cautions and enthusiasms concerning the directions in which, I believe, things are going (or I wish they were going). As a topic in network theory, brokerage across structural holes continues to be mined for diverse new research questions — consequential questions made tractable with methods of social network analysis, and of engaging substance that draws able and expanding audiences.

Constraint versus Agency: Turning to Mario Small's six thematic contrasts in the September workshop discussion of this book, the structural holes argument is about constraint, not agency. Given the bridge and cluster structure in networks (Figure 1), people embedded in a closed network are typically surrounded by belief and behavior similar to their own. People who live in a network rich in structural holes — network brokers — are more likely to have contacts in different social clusters, which exposes them to heterogeneous belief and behavior, which creates information advantages of breadth, timing, and arbitrage (capstone section of the chapter). The difference is no guarantee of achievement: value is not automatically created by moving just any belief or practice across groups, and closed networks in which diverse information is discussed can yield success similar to the success associated with network brokers (Aral and Van Alstyne 2011). Other things equal, the information breadth, timing, and arbitrage advantages of network brokers increase their probability of detecting and developing valuable ideas — increasing a “risk of productive accident.” Whether ego takes advantage of presented opportunities is a separate question. Where ego's network originates is a separate question. Ego can act strategically to create a network that provides advantage, but that too is a topic separate from defining what constitutes advantage from an existing network. Ongoing research on broker behavior is redressing the lack of attention to agency in the first generation of research (central column in Figure 14.9).

Structure versus Context: Every network occurs in the context of a broader social system, and the success associated with networks rich in structural holes is known to be contingent on a would-be broker's social standing in the broader system (see discussion of Figure 14.8). Context gets renewed emphasis in studying broker behavior because behavior appropriate in one context can be inappropriate in another (see discussion of *iungens* versus *separans* in Figure 14.9).

Central Tendency versus Variation, Statics versus Dynamics: A contrast between central tendency and variation has two forms in the structural hole

argument. On one hand, the contrast is the essence of the argument: closed networks converge on homogeneous belief and behavior while networks rich in structural holes contain heterogeneous belief and behavior. On the other hand, both ends of that contrast are measured with a central tendency: ego's contacts are strongly connected on average, or relatively disconnected on average. That said, Burt and Merluzzi (2016) show that the success associated with network brokers on average does not come to the people who maintain a large, open network all the time. Success comes to the people who oscillate between open and closed networks. For the bankers they study, network variation over time is an important element in the success of network brokers (chapter section on network dynamics).

Reality versus Perception: There has long been debate over sociometric data being inaccurate in describing the reality of networks. The debate flounders on alternative definitions of what is "real" (see Krackhardt's chapter). Smith et al. (2012) make a productive step in the debate by showing that people made to feel nervous or uneasy tend to report more closed networks. In short, mood can affect sociometric data. But if a person perceives a closed network around them, won't they behave as if they have a closed network? An important implication of the Smith et al. work could be that creating a sense of confidence in a person is integral to teaching him or her to operate as a network broker. Back on message, two points are illustrated: First, given alternative definitions of social reality, what ego perceives to be real is real in its implications for ego's behavior. Second, having a criterion variable outside the network is helpful to cut through the Gordian knot of reality versus perception. For email data (observed behavior) and sociometric data (personal opinion), we know success is associated with having a network rich in structural holes (Figure 14.7). The theory is a platform for research with data on actual behavior or perceptions of reality. How people perceive the network around them is yet another item on the agenda for current research on broker behavior (Figure 14.9).

Network Structure versus Mobilizing Events: The structural holes argument rests solely on network structure, but studying broker behavior moves the lens to events. Initial studies of broker behavior characterized behavior across events. For example, some people were high in self-monitoring versus others who were low, or managers in China were on average guided by social norms different from the norms guiding managers in the West (see discussion of culture and personality in Figure 14.9). But behavior is context dependent. Ego can behave differently in different contexts depending on ego's mood (Smith et al. 2012) and situational factors (see discussion of *iungens* versus *separans*), and what we do in a situation need not be what we believe we would do (Small 2017). As research becomes more sophisticated in analyzing broker behavior, I believe it will move closer and closer to event-specific relationships. Ethnographic research has been, and will be a primary source for insights, but statistical power will remain with survey network data, which also can be used to provide data on event-specific relations in the context of ego's surrounding network structure (Burt and Opper 2017).

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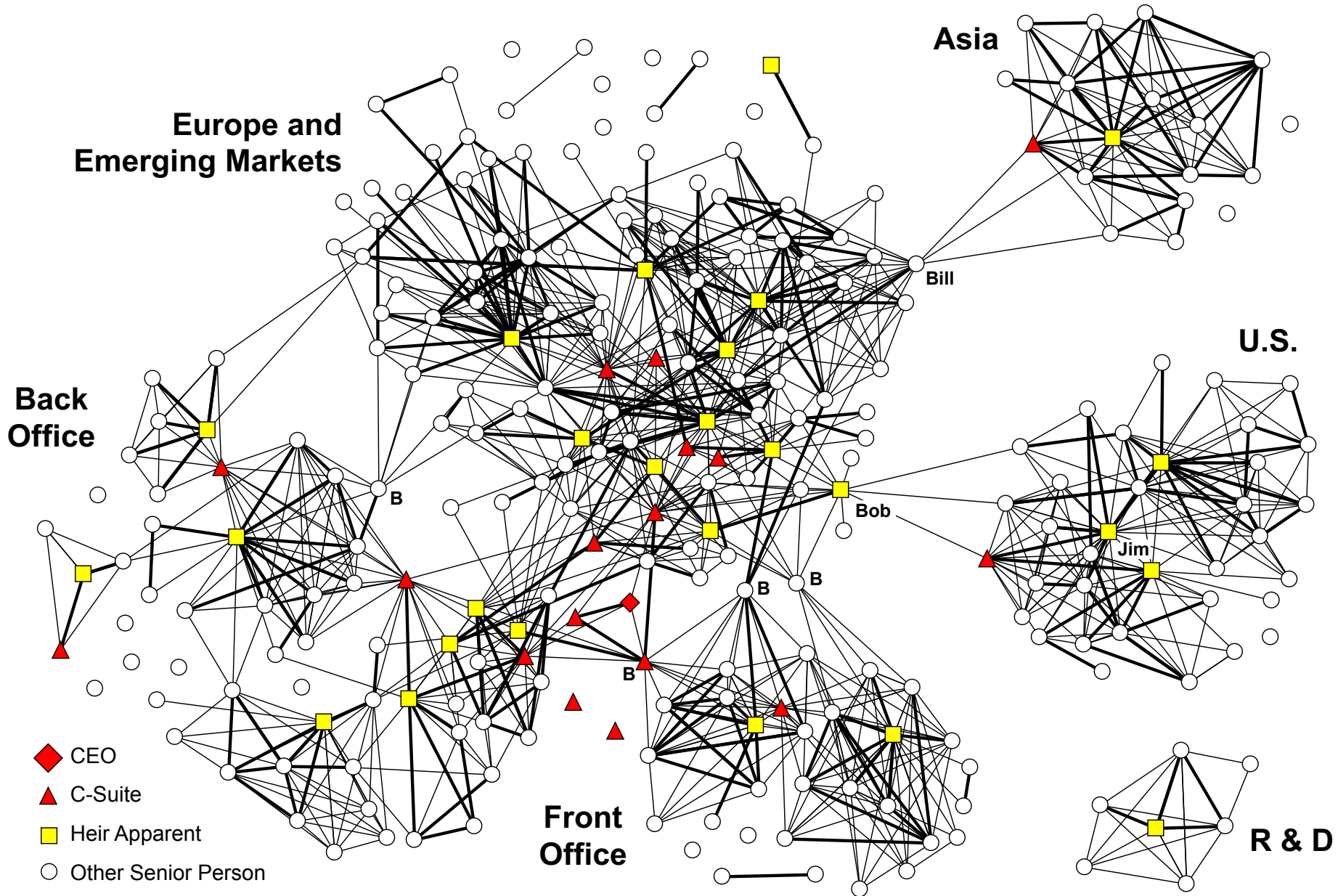
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**Table 14.2**  
**Sampling Structural Holes to Study Brokerage**

Hole Emergence	Hole Resolution		
	Enduring	Transitory	
Discovered			Many
Created			Few
	Many	Few	



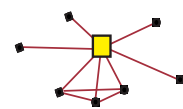
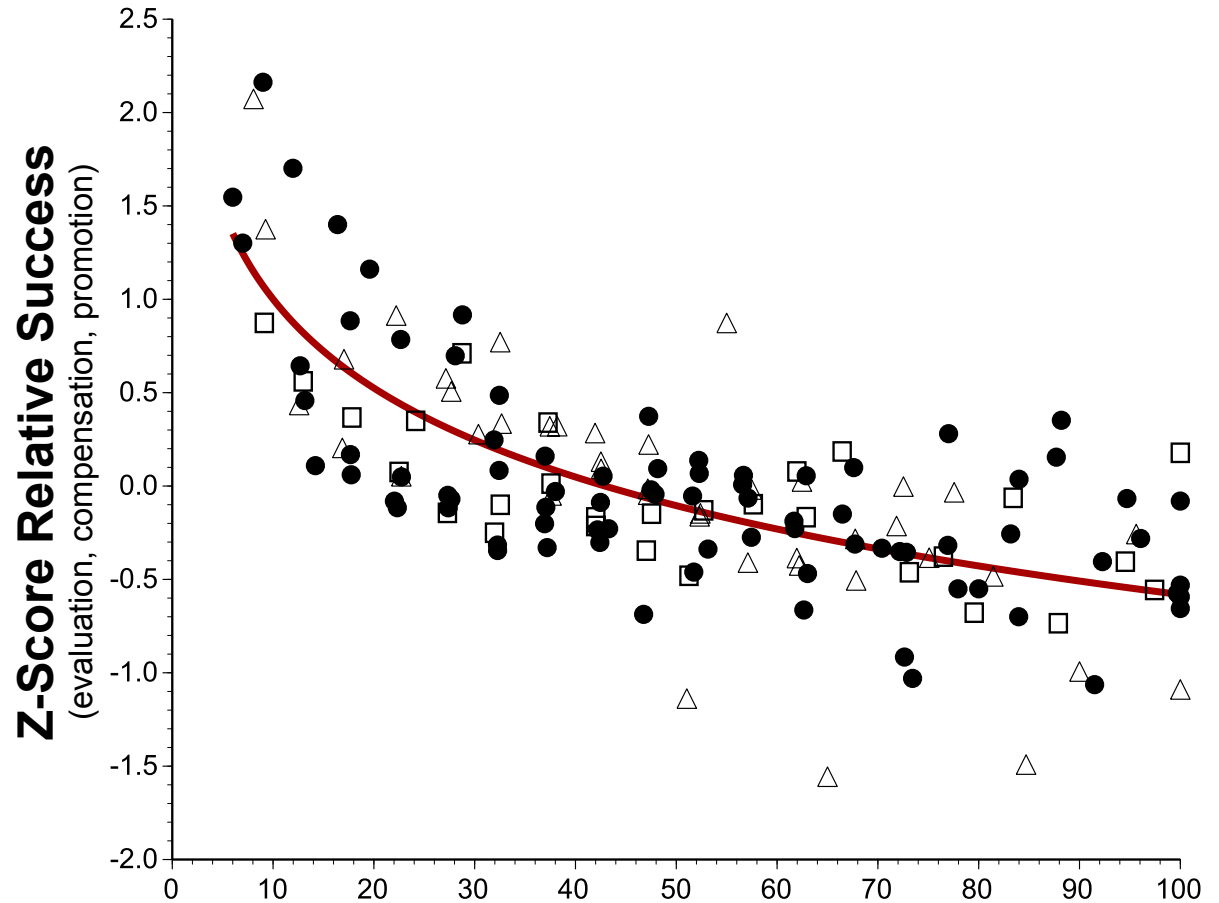
**Figure 14.6 Social Network at the Top of a Leading E.U. Company**

Lines indicate frequent and substantive work discussion; bold lines especially close relations. From Burt (2019a).

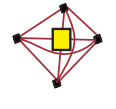
# Figure 14.7

## Success and Access to Structural Holes

NOTE — Plotted data are average scores within five-point intervals of network constraint within each study population (adapted from Burt, 2019b: Figure 1). Correlations are computed from the plotted data using log network constraint.



**Network Constraint (x 100)**  
 many ——— Structural Holes ——— few

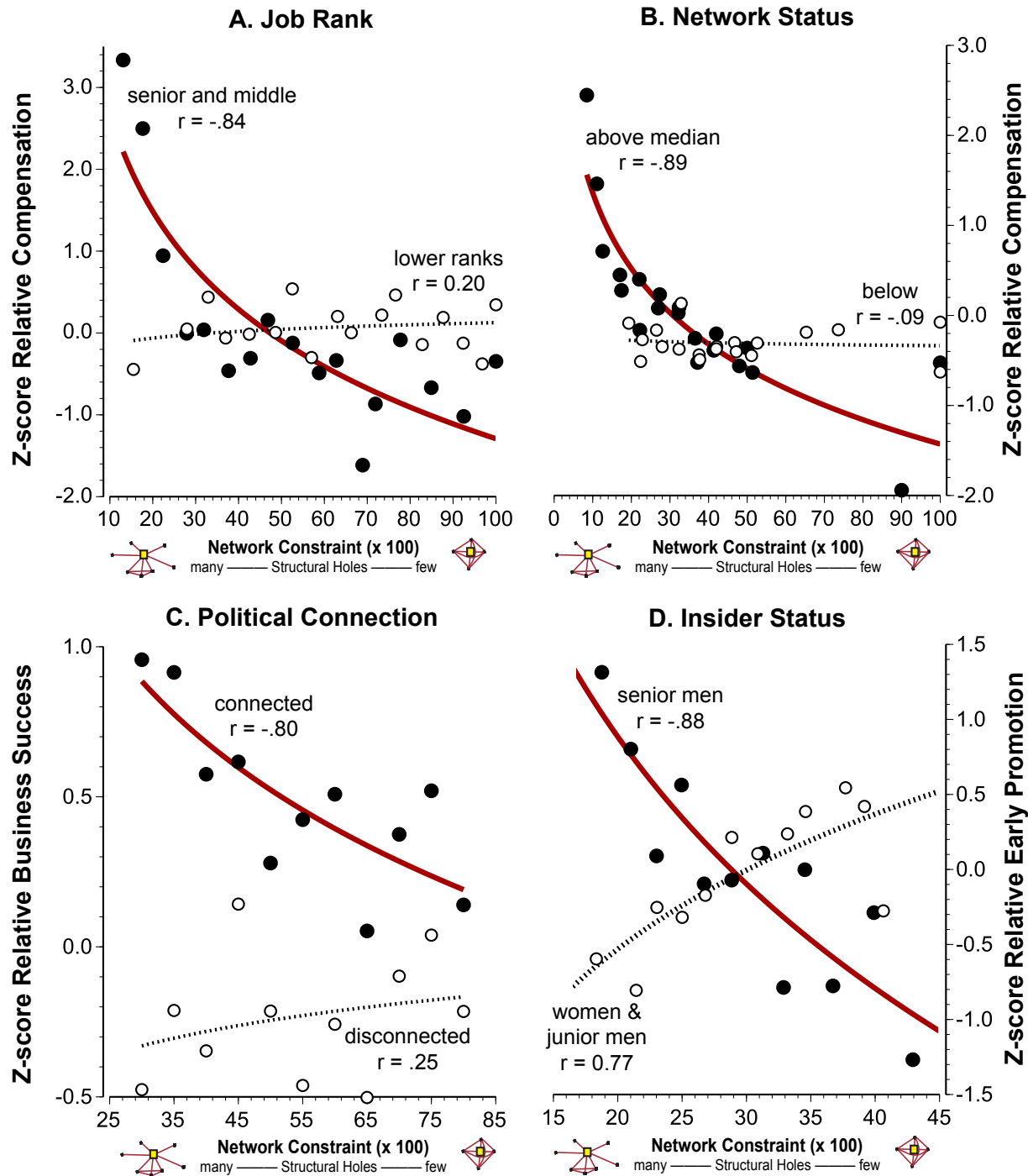


● Managers in the U.S. (n = 2085, 7 study pops, r = -.75)	□ Managers in Europe (n = 1094, 3 study pops, r = -.73)	△ Managers in Asia, mostly China (n = 1342, 3 study pops, r = -.78)
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# Figure 14.8

## Success-Brokerage Link Is Contingent on Social Standing

NOTE — Plotted data are average scores within five-point intervals of network constraint within each study population (electronics company for job rank, software company and HR in commercial bank for network status, Chinese entrepreneurs for political connection, computer company for insider status, see footnotes 7-10). Solid dots are data on people with high social standing. Correlations are computed from the plotted data using log network constraint.



# Figure 14.9 Bringing Behavior Into the Analysis

