

The History of Corporate Networks:
Expanding Intellectual Diversity and the Role of Stanford Affiliations *

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Introduction

When first asked to write a chapter on “Corporate Networks,” I was flummoxed by the Stanford focus. Unlike many of the other theories in this volume, where a game of word association by theory results in a roster of current or emeritus Stanford faculty members, corporate networks has roots in many institutions. Indeed, institutions such as University of Chicago or Stonybrook may make a claim for being at the forefront of research on corporate networks, and University of Michigan is the current home to three of the top researchers in the area. Yet among the core researchers in the area, a good number of them either spent their early faculty years at Stanford (e.g., Pam Haunschild, Don Palmer, Joel Podolny) or completed doctoral training at Stanford (e.g., Jerry Davis, Henrich Greve, Toby Stuart, Christine Beckman). And this list does not include those that came to Stanford later in their careers (i.e., Mark Granovetter and Woody Powell). Furthermore, the history of corporate network research is intertwined with many of the theories developed at Stanford during the late 1970s. To understand this influence, I begin with a brief but broad history of research on corporate networks, a history that begins somewhat earlier than 1970 and continues to the present. Then I turn to the question of Stanford’s role in supporting this research stream and intellectual life more broadly.

First, the boundary question: what are corporate networks? I use the term synonymously with inter-organizational or interfirm relationships and focus primarily (although not exclusively) on horizontal linkages between firms. The first corporate network to receive empirical attention was interlocking directorates or boards of directors (Dooley, 1969; Levine, 1972), and I consider board interlock research broadly construed in this review. For example, I consider research that focuses on interpersonal in addition to that which examines interorganizational factors driving boards, such as the influence of personal ties in obtaining board appointments (Westphal and Stern, 2006). As other sources of data became available, alliances, market exchanges, collaboration and innovation networks, and more recently investment ties have been regularly examined. I consider corporate networks, then, more narrowly than some views of interorganizational networks (Baker and Faulkner, 2002) but more widely than interlocks alone (Mizruchi, 1996).

Excellent reviews of interorganizational networks have appeared with regularity (Galaskiewicz, 1985; Oliver, 1990; Mizruchi and Galaskiewicz, 1993; Podolny and Page, 1998; Baker and Faulkner, 2002; Gulati et al., 2002; Provan et al., 2007; Stuart, 2007). Many of these reviews catalog the antecedents and consequences of corporate networks, and I generally concur with these views. For example, Stuart (2007) suggests corporate networks serve several key functions: information diffusion, attributions of competence, brokerage, embeddedness which ensures trust and generates obligation, and sanctions. My addition to the conversation is not a hitherto antecedent or consequence that has been excluded but, in the spirit of this volume, an exploration of the origin and evolution of corporate network research and how it has altered its theoretical and empirical focus over the past four decades. In order to create this history, I collected roughly 250 articles on corporate networks. With the help of a doctoral student, I searched the titles and abstracts of 13 major journals for relevant articles in management and sociology. Because there is not a common language to capture research on corporate networks (e.g., an article on corporate networks may refer to interlocks, alliances, interorganizational, interfirm, partner or embedded ties), there is some imprecision in our collection of articles and we undoubtedly missed some relevant articles. Thus we under sampled rather than oversampled our area of interest. I supplemented this list with articles from the above mentioned reviews of interorganizational networks and my own knowledge of the literature. To understand how research on corporate networks has evolved, I ran some descriptive statistics on these articles (as well as a few regressions). In the tables presented, I focus on those 212 articles in the eight journals where more than ten articles on corporate networks have been published since 1970 (*Administrative Science Quarterly, American Journal of Sociology, American Sociological Review, Organization Science, Academy of Management Journal, Academy of Management Review, and Strategic Management Journal, Research Policy*). I coded these articles by theory, method, and empirical context. I coded by theory (e.g., institutional theory, diffusion, embeddedness) in order to demonstrate how research on corporate networks fits within the larger organizational context and to see changes over time. Thus, this overview is based on an empirical analysis of trends in corporate networks.

To preview, although research on corporate networks began with a tight focus on interlocking directorates as a tool of organizational and class interests, research in the 1990s rapidly expanded to new areas, spurred in large part by new theoretical developments in embeddedness, diffusion, and institutional theory. Subsequent work has also in large part focused on population ecology, positional power (here I include work on brokerage as well as work on status), and economic theories in the context of corporate networks. In the 21st century, embeddedness has emerged as the dominant theory for research on corporate networks, and research has moved from a stable home in the sociology and organization theory journals to a wider audience in strategy and general management journals. Today, corporate network scholars study alliances, exchange relationships and collaborative ties both within and outside the United States.

Stanford scholars have played an important part in this research trajectory, particularly from the 1990s; however, with the arrival of Jeff Pfeffer and Don Palmer, in 1979 and 1980 respectively, Stanford has always had a scholar of corporate networks on the faculty or among the doctoral students. Corporate networks, as an area of study, is not dominated by a single Stanford-affiliated faculty member, but the field is not dominated by any one person or perspective. Because corporate networks are a phenomenon rather than a theory, many scholars use corporate networks as a key construct across a range of theoretical perspectives and empirical settings (e.g., Dyer, Gulati, Mizruchi, Stearns, Uzzi, and Westphal). I argue that this breadth of use is exactly why Stanford affiliated scholars have a continued interest in and influence on corporate networks. Many theories developed at Stanford are able to draw on corporate networks as a key conduit of information, social standing and organizational legitimacy as well as a means of managing dependency and economic relations. Like Stanford, corporate networks are a 'place' where researchers develop ideas across a wide intellectual landscape. In other words, there is not a dense collection of scholars in corporate networks but rather a number of loosely connected scholarly groups that each focus on a different aspect of what, together, I call corporate networks. The depth of Stanford's influence on corporate networks is obscured by this breadth, and my goal is to illuminate both this intellectual diversity and the underlying Stanford connections.

The Early Years: 1970-1989

The earliest management research on corporate networks emerged from a focus on how the social relations across corporations support class interests. The availability of interlock data, because federal filing regulations require firms to disclose their directors and their director's affiliations, spurred early interest and empirical work along these lines. Indeed, the vast majority of the research in the 1970s and 1980s focused on interlocking directorates (72%). It accounts for 28% of the research on corporate networks over the past four decades, making it still the most prevalent data source for research on corporate networks (see Table 1). Inspired in large part by Mills (1956), early scholars viewed interlocking directorates as a mechanism of capitalist class cohesion. Bunting (1983) found banks and insurance companies in New York to be a cohesive corporate network by 1816, and the interlock network continued to be cohesive as we moved into the 20th century (Mizruchi, 1982; Roy, 1983). With the passage of the Clayton Act of 1914, prohibiting competitors from sitting on each other's boards, board composition and the resulting interlocking network of corporations changed. Yet Dooley (1969), in a comparison of interlocks in 1935 and 1965, found interlocks reflected local interests and the dominance of financial institutions well into the 20th century. Although the centrality of financial institutions faded in the latter portion of the 20th century, as financial firms no longer serve as the primary intermediary between firms (Davis and Mizruchi, 1999), the overall stability of the corporate interlock network remains strong into the 21st century (Davis et al., 2003). These early studies examined the structure of corporate interlocks to make arguments about the integration of the elite class (Levine, 1972; Zeitlin, 1974; Useem, 1979; Mintz and Schwartz, 1981). For example, the similarity of political views among interlocked firms can be seen as a signal of class cohesion (Clawson and Neustadt, 1989; Mizruchi, 1989).

Insert Table 1 about here

Although the very earliest work viewed corporate networks as a source of class power, a perspective that has been called power-structure theory, a parallel track of thinking quickly emerged arguing that corporate networks are a means of managing resource dependence (Pfeffer, 1972; Pfeffer and Nowak, 1976). Interlocks, as well as joint ventures, allow firms to co-opt firms across sectors in the face of market constraints

(Burt et al., 1980; Burt, 1980a, 1983). Although some of this research examines constraints across industries rather than firms (Burt, 1980b), the logic is that relationships are used to reduce a firm's dependence on other organizations and leverage a firm's own interests. Thus, rather than serve class interests, corporate networks serve organizational interests. Early work contrasted these perspectives. For example, Palmer (1983) examined whether, when an interlock between two companies is inadvertently-broken, the interlock is reconstituted between the same two firms. Ties that are not replaced with another tie from the same firm are seen as evidence of intraclass ties rather than interfirm ties (see Stearns and Mizruchi, 1986, for a discussion of functional reconstitution). Although scholars have found that roughly 50% of interlock ties are not reconstituted at all, research using these and other empirical techniques generally concludes that interlocks serve to support both class and organizational interests (e.g., Palmer et al., 1986).

Clearly, the dominant perspectives in this time period were class and resource dependence theories (see Table 2). Yet, near the end of the 1980s, scholars began to consider the relevance of corporate networks for understanding institutional theory (Galaskiewicz and Wasserman, 1989), population ecology (Miner et al., 1990), and the field of strategy (Jarillo, 1988; Zajac, 1988). The other shift that occurred was from an early focus on the antecedents of corporate networks (i.e., are interlocks formed to serve organizational or class interests?) to a focus on the consequences of these networks. In the 1970s, the majority of articles published looked at the precursors to corporate networks. During the 1980s, this focus shifted and research primarily highlighted the consequences of corporate networks. This trend toward consequences continued into the 1990s (54% in the 1980s then 73% of the articles in the 1990s).

Insert Table 2 about here

Exploding interest in corporate networks: The 1990s

Several important developments marked research in the 1990s. First, there was an enormous leap in the number of articles published: the sheer number almost quadrupled from 24 articles in the 1980s, to 91 articles in the 1990s. The 1990s were the decade when research on corporate networks broadened its appeal. In looking at where these articles were published, we saw a dramatic increase in the proportion of corporate

networks articles in all of the journals; with the exceptions of *Academy of Management Review*, which doesn't peak until this decade, and *American Sociological Review*, which was an early leader in corporate networks and published at nearly the same rate in the 1980s and 1990s (7 and 10 articles, respectively).

Along with this growth in the number of articles, we also saw a greatly expanded theoretical breadth of research on corporate networks in the 1990s. Studies focused on the relevance of corporate networks for economic theories, such as agency theory and transaction cost economics, made a dramatic surge, as did studies of diffusion and learning, embeddedness, and institutional theory (see Table 2). Furthermore, a healthy minority of articles explored corporate networks and population ecology (e.g., Podolny et al., 1996; Ingram and Baum, 1997), network position or status (e.g., Podolny, 1994; Stuart, 1998) and network evolution (e.g., Hagedoorn, 1995; Koza and Lewin, 1998).

Despite these important new arenas for corporate networks, over a quarter of the articles published in the 1990s examined corporate networks in relation to social class or resource dependence (e.g., Baker, 1990; D'Aveni and Kesner, 1993). Many articles compared resource dependence and economic predictions for firm action (e.g., Galaskiewicz, 1997; Mizruchi and Stearns, 1994). In addition, Palmer and colleagues continued to demonstrate the importance of both class cohesion and organizational dependence (e.g., Palmer et al., 1993; Palmer et al., 1995). However, the multiple predictors demonstrated by these results suggest a complex set of forces shaping firm action and signaled the move toward a broader array of explanatory factors. Furthermore, Davis (1996) argued that interlocks were no longer a source of co-optation by 1994, and this may account for some of the shift in interlock research. Thus, even within resource dependence and class theories, research moved into new directions.

Although early considerations of resource dependence measured constraint using industry-level data (e.g., industry level input-output tables; Burt, 1980; Burt et al., 1980; Pfeffer and Salancik, 1978), firm-level measures of dependence emerged in the early 1990s (e.g., Baker, 1990; Palmer et al., 1995). In this time period, there were two different conceptualizations of resource dependence. In the tradition of Pfeffer and Salancik (1978), there were those that measured dependence according to asymmetry between two organizational actors (such as the ownership of outside investors or the

proportion of business received from another firm). In the later tradition of Burt (1992), others measured power accrued by structural position in the network (such as structural holes in Walker et al., 1997). It is this latter focus that began to attract more attention in the 1990s, although the former perspective continued to develop as well (e.g., Galaskiewicz, 1997). In this latter stream, we see an interest in how status within a market shapes economic activities (Podolny, 1993). Toby Stuart and colleagues used these ideas of position and status in the context of corporate networks to demonstrate how the prominence of network partners provided organizational advantage (Stuart, 1998; Stuart et al., 1999). This important area of research on positional advantage continues to attract attention in the most recent decade (growing from 13% to 21% of the articles).

In the 1990s, two important shifts also occurred within those studies coded as class and focused primarily on managerial interests and corporate cohesion. In the first twist on traditional class research, Zajac and Westphal (1996) examined how individual interests of CEOs and board members, and the intraorganizational contests for power, play a role in shaping the overall corporate network (see also Westphal and Zajac, 1997). It is the group interaction and exchange between CEOs and the board that was their focal point, not the overall corporate network. The second twist was to focus on the mechanism (often interlocks) by which ideas and practices supporting managerial control diffuse. For example, Davis (1991) found interlocks acted as a means of maintaining managerial control despite agency theory predictions about the role of the corporate board. The anti-takeover defense of poison pills diffused through the corporate network, protecting managerial interests, and it is both the service of managerial interests and the diffusion process itself that are of note. Thus, diffusion processes and individual interests have implications for corporate control, but it is the process of diffusion or group interaction and contestation that was the focus of these studies.

Emerging from the earlier interlock research, like Davis (1991), studies of diffusion through corporate interlocks developed into a major area of research in the 1990s. Rather than considering interlocks purely as an indicator of corporate control, networks were seen as a means of communicating and diffusing new ideas (often, although not exclusively, through interlocks). For example, Haunschild (1993) found that firms imitate their interlock partners by making similar types of acquisitions (e.g.,

vertical, horizontal, conglomerate); furthermore, firms imitated those partners even when they were engaging in dissimilar actions. Diffusion and learning through corporate networks accounted for a full 22% of studies during the 1990s (see Strang and Soule, 1998, for a review). Of particular note are studies that began to examine the contingencies of corporate networks. For example, Davis and Greve (1997) examined the different diffusion patterns of two corporate governance practices, poison pills and golden parachutes, and found diffusion could be explained by interlock and geographic proximity, respectively. The cultural meanings of the practices themselves shaped the particular pattern and source of diffusion. As another example, Haunschild and Beckman (1998) explored how the combination of information sources shaped acquisition decisions. They found that interlocks were more influential when complementary sources of information, such as the mass media, focused attention on acquisitions. Rather than focus on how practices diffuse through corporate networks, these studies explored what accounts for differences in diffusion patterns.

Related to these studies, and included with the studies coded as diffusion in Table 2, are those studies focused on learning through corporate networks. Some of these studies resemble those above in that they examined differences in who adopts particular practices. For example, Kraatz (1998) found that similarity between the focal organization and adopters in the organization's network accounted for the adoption of major curriculum changes. Haunschild and Miner (1997) found that firms imitated the frequent practices of other firms and those practices with salient outcomes (importantly, both positive and negative outcomes). An important subset of these articles focused not on dyads but on the network itself (Podolny and Page, 1998). For example, Powell et al. (1996) found that firms embedded in a network of R&D alliances, with experience in interorganizational relationships, grew more quickly and developed richer networks than other firms. They argued for networks of learning where innovation is found through interorganizational collaborations rather than individual firms. This focus on the network level of analysis remains understudied but began to gather attention in the 1990s (Provan et al., 2007).

A closely related theoretical perspective that garnered significant attention during the 1990s is institutional theory. A few articles focused exclusively on institutional

theory; for example, Burns and Wholey (1993) found institutional pressures predicted the adoption but not the abandonment of matrix management programs. However, most articles in the 1990s drew on multiple theoretical perspectives. For example, some of the articles linked diffusion with institutional processes, such as Westphal et al.'s (1997) discussion of how the practice of TQM looked different depending on when firms' adopted (early or late in the diffusion process) and how the role of networks changed over time. Other articles explored the role of power and institutional processes in the adoption of particular practices or the continuity and dissolution of corporate networks (e.g. Palmer et al., 1993; Baker et al., 1998).

Research on embeddedness emerged as a leading area of interest in the 1990s. Following the logic of Granovetter (1985), these articles focused on how social relations constrain organizational economic actions. This work builds from theories of class and power-structure, at least implicitly, because to argue that corporate networks serve class interests acknowledges embeddedness exists. The difference between these views is the focus on networks as a source of elite cohesion or as an enabler of economic action. This shift in attention has changed the tone of the discussion from somewhat critical or suspicious of managerial motivations to a generally positive discussion of how embedded relationships can benefit firms (Uzzi 1996, 1997, 1999). For example, Uzzi (1996) found that a mix of embedded and arm's length ties improved the survival chances of firms (completely embedded ties were detrimental). In a similar vein, Gulati and Gargiulo (1999) argued prior alliances and common ties facilitated the development of new alliances (see also Gulati 1995a, 1995b, 1998, 1999). Relationships are embedded in an existing social structure which shapes future ties as well as firm performance.

A final series of articles in the 1990s examined economic theories within the context of corporate networks. The vast majority of these articles discussed transaction cost economics (e.g., Parkhe, 1993; Dyer, 1996, 1997), although a significant number addressed agency theory. Some of these articles compared organizational and economic views; for example, Galaskiewicz (1997) compared agency, resource dependence and institutional explanations to predict corporate charitable giving. Scholars also used corporate networks to discuss strategy theories such as the resource-based view (Eisenhardt and Schoonhoven, 1996; Dyer and Singh, 1998; Gulati, 1999). Some of the

articles suggested corporate networks add a social or symbolic component to economic or rational processes in the firm (Wade et al., 1990; Zajac and Westphal, 1995).

In addition to this vast theoretical breath (seen in Table 2), research on corporate networks expanded beyond the study of interlocks during the 1990s (see Table 1). However, board interlocks continued to be a focus of study, accounting for 27% of the total articles. Of these interlock studies, half focused on class or resource dependence theories (e.g., Palmer et al., 1995; Kono et al., 1998; Gulati and Westphal, 1999), with a good number considering diffusion or institutional processes (Davis, 1991; Haunschild, 1993; Davis and Greve, 1997). In the 1990s, however, alliance networks, market relationships and collaboration ties all became important corporate networks of study – emerging virtually from nowhere. Alliance networks and embeddedness were clearly linked: 50% of all embeddedness articles in the 1990s examined alliance networks (e.g., Gulati, 1995a, 1995b, 1998, 1999). That said, articles examining alliances drew on a range of theories (e.g., resource dependence, institutional theory, embeddedness, evolutionary theory, diffusion) because these networks offered a new empirical context to study a number of important ideas. The focus on alliances has increased our understanding of both the emergence and evolution of corporate networks (Hagedoorn, 1995; Koza and Lewin, 1998; Gulati and Gargiulo, 1999) and the role of corporate networks outside the U.S. (e.g., Dyer, 1996; Lincoln et al., 1996). The research on market relationships, in contrast, focused primarily within the U.S. Those studying market relationships have informed our understanding of theories such as embeddedness (Uzzi, 1996), resource dependence (Baker, 1990), and institutional theory (Haunschild and Miner, 1997). Finally, research that explored collaborative networks found institutional linkages reduced organizational mortality (Baum and Oliver, 1991) as well as increased innovation and change (Smith et al., 1991; Powell et al., 1996; Kraatz, 1998). Despite this theoretical and empirical breadth, however, the vast majority of research considered the consequences rather than the antecedents of corporate networks during this time period (73%).

Research in the 21st Century: 2000 to the present

Although this volume highlights research between 1970 and 2000, it is worth noting the directions that corporate network research has moved in this decade. Corporate

networks remain a vibrant area of research, and more articles will be published on the topic in this decade than the last. However the favored empirical context has continued to shift. In the current decade, interlock research accounts for only 13% of articles, with other corporate networks becoming more prevalent (again see Table 1). This change in empirical context coincides with a shift in theoretical focus as well.

In this decade we see a clear focus on the performance consequences of corporate networks. For example, Shipilov and Li (2008) demonstrated an open network, or one with structural holes, had both positive and negative effects on market performance and aided firms in status accumulation. Furthermore, more articles draw on strategy theories (e.g., Gimeno, 2004; Zaheer and Bell, 2005). This shift to performance and strategic consequences can also be seen in the changing publication outlets for corporate network research. Over the past four decades, ASQ has been the key outlet for corporate network research (32% of all articles) but in this decade SMJ has matched ASQ for articles published on corporate networks (both publishing roughly 20 articles between 2000 and 2008). This is notable as much for the drop in articles published in ASQ from the prior decade (from 32 to 22) as for the growth in SMJ (from 11 to 20).

Another key development is the dominance of the embeddedness perspective through empirical examinations of market relationships (e.g., Davis et al., 2000; Gulati and Sytch, 2007; Uzzi and Lancaster, 2004) and collaborative relationships (e.g. Ahuja, 2000; Galaskiewicz et al., 2006; Owen-Smith and Powell, 2003). Of particular importance has been understanding the importance of geography in creating embedded corporate networks. Kono et al. (1998) spurred this resurgence of interest in space (the importance of propinquity is an old concept: Festinger et al., 1950) by demonstrating how the formation of interlocks are predicted by the other companies and elite clubs in a city. They suggest local and nonlocal interlocks have different determinants. Sorenson and Stuart (2001) focused on the consequences of geographic proximity and demonstrate that geographic distance predicts venture capital investments (see also Marquis, 2003, for a discussion of geographically focused imprinting).

A final growing theoretical focus considers the emergence and evolution of corporate networks (e.g., Human and Provan, 2000; Neuman et al., 2008; Stuart et al., 2007). The growth has refocused research on the antecedents of networks (although

consequences continue to be the dominant focus and more research on antecedents is needed, see Stuart, 2007). This growth has also fueled longitudinal research (28% of the research on corporate networks in this decade examine networks over time). For example, at the field level, Powell et al. (2005) explored how networks within the biotechnology industry changed over time according to different logics of attachment. Focusing instead on dyadic networks, Beckman et al. (2004) suggested levels of uncertainty lead firms to broaden or reinforce their alliance and interlock networks. Building from this, recent work has examined the role of uncertainty, contextual factors, and shortcuts in establishing new market or alliance relationships (Rosenkopf and Padula, 2008; Sorenson and Stuart, 2008). Also at the dyadic level, Hallen (2009) examined the role of founder human capital in explaining the origin of corporate networks (see also Schoonhoven, Beckman and Rottner, 2009).

In addition to the above mentioned areas, new theoretical developments have occurred within the foundational perspectives of corporate networks. In the area of diffusion of learning, for example, work in this decade has moved beyond the diffusion of a particular practice through the intercorporate network. For example, Beckman and Haunschild (2002) explored how the diversity of network experiences, rather than particular dyadic ties, resulted in learning about acquisition premiums. Further, Westphal et al. (2001) demonstrated second-order imitation effects through interlocks rather than the diffusion of specific policies. Others have explored global diffusion patterns (e.g., Guler et al., 2002) or the impact of illegitimate practices on the overall network structure (Sullivan et al., 2007).

In the area of resource dependence, scholars have deepened our understanding of the role of power asymmetry and interdependence in interfirm relations (Casciaro and Piskorski, 2005; Gulati and Sytch, 2007) as well as demonstrated the penetration of interfirm dependence to influence on internal promotion decisions (Beckman and Phillips, 2005). However, rather than focusing on the traditional resource dependence view, more attention has turned to consideration of brokerage, structural holes, and measures of network position. This focus on position and status has been taken up by a wide number of scholars (e.g., Galaskiewicz et al., 2006; Soda et al., 2004).

This decade has also brought increasing methodological sophistication. We see the incorporation of sophisticated network methods and graphics to examine existing theories (e.g., Powell et al., 2005). For example, Cattani et al. (2008) used network methods and graphics to demonstrate that interorganizational relations were key to the legitimation processes and reduced organizational mortality rates (reminiscent of Miner et al., 1990). Other recent work has drawn on small-world network techniques to better understand embeddedness, innovation, and the emergence and evolution of networks (e.g., Fleming et al., 2007; Rosenkopf and Padula, 2008; Schilling and Phelps, 2007). These studies have investigated the effects of cohesion and reachability at the network level and linked it to firm- and network-level outcomes. This latter work in particular offers great promise to developing our understanding of corporate networks. In addition, researchers are using new empirical techniques to deal with problems of endogeneity (Lomi and Paterson, 2006; Stuart and Yim, 2008). For example, Stuart and Yim (2008) reported extensive additional analyses to demonstrate that the influence of interlocks on the likelihood of receiving a private-equity offer has a causal relationship. Finally, we have also seen a few studies examining different types of networks simultaneously (e.g., Beckman et al., 2004; Lee et al., 2001) and the study of multiplex as well as cross-sector networks should prove to be a fruitful area for additional research and may shed new light on the development of communities (e.g., Marquis, 2003).

Finally, beginning in the 1990s and continuing to this decade we finally see growth in comparative studies or studies looking outside of the U.S. (39% of the research in this decade consider non-U.S. contexts). Recent research on corporate networks has not only included those focused on Japan (Ahmadjian and Lincoln, 2001) but also considers networks in South Korea (Siegel, 2007), Europe (Starkey et al. 2000; Windolf, 2002), China (Keister, 2001), and Australia (Ingram and Roberts, 2000).

The Stanford Connection

In this final section, I link Stanford to this broad array of research on corporate networks. Given my lack of objectivity, I looked to my empirical analysis to answer the question of how much Stanford contributed to the development of corporate networks. First, I tried to answer the question: was Stanford a leading contributor to research on corporate networks? The empirical answer is clearly a resounding “yes”. Overall, 23% of

the research on corporate networks has been done by Stanford-affiliated scholars. Is this a large percentage? When I tallied the other institutions that can claim influence through the publishing of affiliated scholars, Stanford takes the lead. This accounts for the multiple institutions that can claim a scholar. For instance, Stanford, Michigan, Columbia, and Northwestern can all claim Jerry Davis; Northwestern, Michigan and Texas can claim Jim Westphal. Despite this, Stanford-affiliated scholars fare well, publishing the largest number of articles (with 48, followed by Kellogg and Michigan with 31 and 30 respectively). Admittedly, my tallies likely undercounted for some institutions as I relied on my own knowledge of people's career trajectories and doctoral training and only limited archival research. As another check, I created a table of the 19 most prolific scholars of corporate networks (those publishing four or more articles in the selected journals). Eight on the list have Stanford affiliations (Kellogg claims 5; Michigan and Harvard, each 3; see Table 3). Although these are measures of quantity and not necessarily of overall influence, they are indicative that Stanford had a role in the development of this research stream. I find this reassuring, as it validates having a chapter on corporate networks in this volume. However, the qualitative story is perhaps more interesting and more revealing than the quantitative story.

Insert Table 3 about here

The story was quite simple in the beginning. The two early Stanford faculty members to play a role in corporate networks were Jeff Pfeffer and Don Palmer. Initially, each represented a key early view: either interlocks as representing organizational dependence (Pfeffer) or as representing class cohesion (Palmer). Pfeffer returned to Stanford in 1979 (where he had received his PhD in 1972), and, although his primary focus was the development of resource dependence theory (see Davis, this volume), his influence on early corporate network research is clear. Pfeffer wrote two corporate network papers, one on interlocks and the other on joint ventures (Pfeffer, 1972; Pfeffer and Nowak, 1976). These papers, along with Pfeffer and Salancik (1978) and other writings, set the stage for what has accounted for 20% of all corporate network research to date. The other key scholar, Palmer, arrived at Stanford in 1980 as a freshly-minted Ph.D. from Stonybrook. Palmer focused his early research on corporate networks and became one of the leading scholars to integrate and test class theory and resource

dependence both during and after he left Stanford (Palmer et al., 1986; Palmer et al., 1995; Palmer and Barber, 2001). As discussed earlier, the theories these two faculty members studied were at the heart of early research on corporate networks. And without corporate networks, these important theories would have lacked the inspiration and empirical context in which to develop.

The next wave of corporate network research at Stanford occurred in the shadow of great new theoretical developments (such as learning, institutional theory and population ecology). The shift of focus from corporate networks as a means of corporate control to a mechanism of communication and legitimacy occurred as these new theoretical developments took hold. During this time where Stanford flourished (Scott, this volume), so too did research on corporate networks. Joel Podolny joined the faculty in 1991, followed by Pam Haunschild in 1994. Podolny (followed by his student, Stuart) conducted important work on status and position in corporate networks in the context of investment banking and alliances. This work has been at the forefront of emerging research on positional power (along, of course, with Ron Burt; see Table 2). Haunschild (followed by her student, Beckman) conducted early work on the diffusion and learning that occurs through corporate interlocks. Greve, a student of Jim March, conducted his own research on diffusion patterns. These and other Stanford scholars published eight articles drawing on institutional theory; nine on diffusion and learning. In terms of empirical contexts, the majority of the Stanford-affiliated scholars studied interlocks during the 1990s (e.g., Beckman, Davis, Haunschild, Palmer; indeed, almost half of all interlock research in the 1990s has a Stanford-affiliation). Scholars central to corporate network research continued to be drawn to Stanford: Granovetter joined the faculty in 1995 and Powell in 1999.

Perhaps because corporate networks offered a tool for testing core ideas within theories such as institutional theory, resource dependence and diffusion and learning, a number of Stanford doctoral students of the late 1980s and early 1990s (e.g., Davis, Greve, Stuart) emerged as key players in research on corporate networks. The diversity of thought around corporate networks (rather than a single dominant personality) provided students with an array of possibilities, and networks were very much a part of what students attended to during their studies. It is important to point out that two of the most

prolific scholars of corporate networks in Table 3 were on the faculty (Haunschild and Palmer) and two were Stanford doctoral students (Davis and Stuart); and these people did not work together. They all made independent contributions to the field of corporate networks, which speaks to the rich diversity of thought at Stanford. Palmer and Davis, for example, both continue to be leading voices in our understanding of class but have clearly distinct voices (Barber and Palmer, 2001; Davis et al., 2003).

I will say only a word or two about where Stanford scholars have been less visible. The recent move to predicting firm performance from corporate networks and to focus on traditional strategy theories has not been led by Stanford scholars. Stanford-affiliated corporate network scholars, consistent with the hallmarks of the “Stanford School,” have tended to focus on the “non-rational” or social components of corporate networks (Scott, this volume). As might be expected then, the more sociologically-oriented Stanford-scholars have been over-represented in studying the antecedents rather than the consequences of corporate networks (accounting for 39% of the research on antecedents). Stanford-scholars have also been U.S. focused, perhaps as a result of interlock research.

Although I have talked about specific Stanford-affiliated scholars of corporate networks, I have neglected thus far to talk about the role of Stanford as a place. As many of the scholars in this volume note, Stanford as a place was important to the development of many ideas, including corporate networks. As Scott rightfully points out (this volume), it is not just the aggregation of smart individuals that explains Stanford’s preeminence. Indeed, network research suggests relationships among faculty members are an important source of diffusion for new ideas. The constellation of people at Stanford during the 1980s and 1990s certainly facilitated this diffusion. The close proximity of these departments in space (the sociology department and the education, business, and engineering schools are not more than a half a mile away from each other) also clearly plays a role in understanding the innovations that occurred (Sorenson and Stuart, 2001). The abundant, co-located, and diverse intellectual resources resulted in high rates of learning and creative outcomes (Beckman and Haunschild, 2002; Fleming and Singh, 2008).

As Scott details, however, it was not just the mutual stimulation of people at Stanford day-to-day that was important, it was the infrastructure put in place to support the development of new ideas. In the case of corporate networks, early leaders in corporate networks visited Stanford. For example, Ed Laumann (Laumann et al., 1977) was an Asilomar presenter. Mark Granovetter spent the year on a faculty fellowship in 1986-87 (and then joined the Stanford faculty in 1995). Having Granovetter as part of the fabric of Stanford for that year, given that Granovetter (1985) has probably inspired more research on corporate network research than any single article (25% of all research since it was published), is another example of how Stanford managed to be at the center of new ideas.

Although not all roads lead to or from Stanford in this case, it is also true that many of the leading scholars in my review have been connected to Stanford at one time or another. This mixture of scholars is responsible not for a single perspective or viewpoint, but rather for a diversity of influential ideas that continue to lead the field. That this diversity of views and scholars flourished at Stanford serves as a perfect example of the unique collegial capital described by Dick Scott. Stanford was a remarkable place to be during the latter part of the 20th century, and I am indebted to the institution for the experience.

The History of Corporate Networks

Table 1. Type of Corporate Network by Decade

	<i>Interlocks</i>	<i>Alliances</i>	<i>Market</i>	<i>Collaboration</i>	<i>Other</i>	<i>Total Articles</i>
<i>1970s</i>	4	1	1	1	1	8
	50%	13%	13%	13%		
<i>1980s</i>	19	0	1	1	3	24
	79%	0	4%	4%		
<i>1990s</i>	24	22	26	17	2	91
	27%	24%	29%	19%		
<i>2000s</i>	12	25	28	19	5	89
	13%	28%	31%	21%		
Total	59	48	56	38	11	212
	28%	23%	26%	18%		

Table 2. Theoretical Perspective by Decade

	<i>Class Theory</i>	<i>Resource Dependence Theory</i>	<i>Positional Power Theories</i>	<i>Institutional Theory</i>	<i>Embeddedness Theory</i>	<i>Evolution Emergence Theories</i>	<i>Diffusion Learning Theories</i>	<i>Ecology Theories</i>	<i>Economic Theories</i>	<i>Strategy Theories</i>	<i>Perform. DV</i>	<i>Total Articles</i>
1970s	3	4	0	0	0	0	0	0	1	0	0	8
	37%	50%	0%	0%	0%	0%	0%	0%	14%	0%	0%	
1980s	11	9	0	1	1	1	0	0	0	2	0	24
	46%	38%		4%	4%	4%	0%	0%	0%	8%	0%	
1990s	9	19	12	20	20	10	20	11	18	10	6	91
	10%	21%	13%	22%	22%	11%	22%	12%	20%	11%	7%	
2000s	4	9	18	7	27	18	12	9	8	14	24	89
	5%	10%	21%	8%	30%	20%	14%	10%	9%	16%	28%	
Total	27	41	30	28	48	29	32	20	27	26	30	212
	13%	20%	14%	13%	23%	14%	15%	9%	13%	12%	14%	

The History of Corporate Networks

Table 3. Authors Publishing on Corporate Networks (in journals publishing 10 or more network articles since 1970)

<i>Author</i>	<i>N of Articles in Eight Select Journals¹</i>
Gulati, R.	12
* Stuart, T.	9
Westphal, J.	9
Mizruchi, M.	8
Dyer, J.	7
Galaskiewicz, J.	7
* Haunschild, P.	7
* Davis, G.	6
* Palmer, D.	6
Baum, J.	5
Brewster Stearns, L.	5
Hagedoorn, J.	5
*Podolny, J.	5
Singh, H.	5
Uzzi, B.	5
* Beckman, C.	4
* Greve, H.	4
* Powell, W.	4
Zajac, E.	4

1. *Administrative Science Quarterly, American Journal of Sociology, American Sociological Review, Organization Science, Academy of Management Journal, Academy of Management Review, and Strategic Management Journal, Research Policy*

2. * Denotes Stanford Affiliated scholars (8 total)

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