

# The Pressure of the Past: Network Imprinting in Intercorporate Communities

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This paper extends organizational imprinting theory to networks by examining how the social technology available during the establishment of community-based intercorporate networks continues to influence contemporary network structures despite major changes in the U.S. corporate environment. I examine the 51 largest U.S. community network systems in 1986, the same networks in 2000, and the network activity of the component organizations of those network systems. Results show that even when controlling for many plausible alternative explanations, communities established prior to the advent of air travel technology have preserved locally focused networks, which suggests that this pattern is maintained by emulation of locally legitimate templates of action. This research contributes to work on imprinting by extending it to networks and in theorizing the social mechanisms that result in the persistence of social forms. Furthermore, it contributes to work on directorship networks by suggesting that the way information flows through this network may be geographically contingent. ●

Organizational scholars have done considerable work in understanding how the past continues to influence the present. According to Stinchcombe (1965: 142), “the groups, institutions, laws, population characteristics, and sets of social relations that form the environment” are historically contingent and imprint an organization with the characteristics of the era when it was founded. Stinchcombe (1965) illustrated how this hypothesis was supported for unions, fraternities, and savings banks, as well as many other types of organizations and industries. More recent studies have examined how initial conditions affect outcomes such as organizational mortality in beer brewing and newspapers (Swaminathan, 1996), the organizational strategy of semiconductor manufacturers (Boeker, 1988), personnel procedures in governmental agencies (Meyer and Brown, 1977), and rates of change in nonprofits (Tucker, Singh, and Meinhard, 1990). Although there has been significant interest in the effect of founding conditions on organizational outcomes, little attention has been given to how social and technical conditions at the time of founding affect other social forms, such as network structures, and the social mechanisms that maintain historically imprinted patterns.

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Researchers are beginning to recognize the persistence of network structures. Walker, Kogut, and Shan (1997) noted a path dependence in the biotechnology partner network, and Uzzi and Spiro (2004) discovered that the pattern of connections among individuals associated with Broadway musicals has maintained the same structure for over 90 years despite tremendous changes in the industry and the place of musicals in the entertainment market. Furthermore, the local board of director and acquaintance network of corporations and philanthropies in Minneapolis–St. Paul remained cohesive in the 1980s despite the retirement of many key network members (Galaskiewicz, 1997). The Minneapolis case is particularly intriguing because, while previous studies have indicated that the directorship network was segmented into regional groupings early in the twentieth century (Mizruchi, 1982) and in the 1960s (Mintz and Schwartz, 1985; Kono et

al. 1998), it is not obvious why this pattern would be maintained, given the considerable turnover of U.S. corporations (Navin, 1970; Davis and Stout, 1992; Mizruchi, Stearns, and Marquis, 2004) and extensive changes in the economy and business strategy of U.S. firms since the 1970s (Nohria, Dyer, and Dalzell, 2002).

The modern intercorporate network was established at the time of the "managerial revolution" that accompanied the rise of major U.S. industrial corporations around the turn of the twentieth century (Chandler, 1977). The most important social technology at that time that influenced board of director connections was the difficulty of intercity travel, and geographic communities established prior to the advent of air travel should be more likely to maintain more locally focused networks than more recently established communities. Although it is logical that communities established early in the century would have had locally based networks because of the lack of effective transportation technology such as the automobile and plane, since more recent periods were characterized by the ease of intercity travel (Borchert, 1967), it is not clear why these patterns would be maintained in modern times. To examine how the historical factors present during the formation of local directorship networks may have a persistent effect on the network structure, I take a social-mechanism-based approach (Hedstrom and Swedberg, 1998; Davis and Marquis, 2005).

Stinchcombe (1991: 367) described a social mechanism as "bits of theory about entities at a different level (e.g., individuals) than the main entities being theorized (e.g., groups), which serve to make the higher-level theory more supple, more accurate, or more general." To better understand the higher-level imprinted director network system, one also needs to examine the individual component organizations within these systems to elucidate the processes by which the imprinted pattern is maintained. Drawing on the social network literature, I focus on two key social mechanisms that would lead component organizations to replicate the existing network structure: the importance of social institutions as connecting mechanisms (Galaskiewicz, 1991; Saxenian, 1994) and the emulation of locally legitimate templates of action (Meyer and Rowan, 1977; Davis and Greve, 1997). To establish that an imprinted pattern exists, I analyzed the board of director networks of 51 cities with the greatest number of public company headquarters in 1986 and reexamined this same sample of communities with data from 2000. To explain how an imprinted pattern is maintained, I then conducted organizational-level tests of organizations within those communities to better understand the mechanisms that lead to the maintenance of imprinted patterns.

## **IMPRINTING IN INTERCORPORATE COMMUNITY NETWORKS**

Prior work on intercorporate director networks has only examined the largest U.S. firms. Looking at more recent firms and a sample that comprises all U.S. corporations on major stock exchanges, descriptive evidence indicates that there is considerable variance in the distribution of local con-

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nections among major U.S. metropolises. For example, in the data I analyze, in 2000, 36 percent of the directorship connections of Minneapolis–St. Paul firms were with other Minneapolis–St. Paul firms, whereas for Denver this figure is only 5 percent. A comparison of the intercorporate community networks of St. Louis, MO, and Phoenix, AZ, in 2000 provides a good example of how widely U.S. communities can vary in the extent of their network connections. These two corporate communities were very similar on many contemporary characteristics, including the number of public companies (St. Louis had 59, and Phoenix had 52) and population in 2000 (St. Louis: 2,603,607; Phoenix: 3,251,876). A primary difference, as reflected by 1910 population, is that St. Louis was well established early in the century (a 1910 population of 687,029), whereas Phoenix was more recently established (a 1910 population of 11,134). The establishment of a locality during a time when transportation was limited may have had a lingering effect on the propensity of current corporations to be locally tied to one another. Thus, in 2000, St. Louis had a much higher percentage of local connections (31 percent) than did Phoenix (13 percent). This difference is not simply due to St. Louis having older companies. Although St. Louis was established much earlier, as of 2000, 77 percent of companies headquartered there have been founded since the early 1970s, a percentage comparable to Phoenix, where 81 percent of companies have been founded since the early 1970s. Put another way, while communities like St. Louis may be old, the companies in their intercorporate networks, on average, are not. Air travel was exceptionally accessible when the majority of companies in these communities were established, and yet St. Louis continues to have a much denser community-based intercorporate network. The pattern displayed by St. Louis is also common for other communities that were established in the early part of the century. Even early-established communities that have undergone extensive restructuring of their labor force and corporate community (e.g., Cleveland and Pittsburgh) still maintain very locally based networks. Given the considerable variance across local networks of shared directors, it is clear that geographic factors are important to consider.

Stinchcombe (1965) reasoned that organizations founded during the same historical period would have similar structural characteristics because they faced the same environments and challenges. A classic example is fraternities established during common periods, which have similar goals and structures and have maintained historically specific features up to the present, despite being founded over a century ago. The organizational imprinting literature has described how the founding conditions for an organization have lasting structural influences and has focused on two different phenomena: (1) the importance of founders and top management for the future trajectory of individual organizations (e.g., Boeker, 1989; Eisenhardt and Schoonhoven, 1990; Baron, Hannan, and Burton, 1999) and (2) how the environment at founding, particularly competitive conditions, influences cohorts of organizations (e.g., Meyer and Brown, 1977; Boeker, 1988; Swaminathan, 1996). The second category of studies argues generally that the structures developed to meet the initial

competitive conditions will still be apparent in contemporary organizations.

While Stinchcombe (1965: 153) argued that it is the “social technology available” that influences the “organizational inventions that can be made at a particular time in history,” most imprinting studies in the organizational literature have focused on the effect of the founding characteristics of the economic environment. This includes how the founding economic environment influenced subsequent rates of change (Tucker, Singh, and Meinhard, 1990), overall growth rates (Eisenhardt and Schoonhoven, 1990), and organizational mortality (Swaminathan, 1996). While economic forces are certainly an important influence on organizations, they are only a small part of the environment Stinchcombe theorized (Lounsbury and Ventresca, 2002).

A limited number of imprinting studies have considered the influence of the broader social environment. Kimberly (1975) described how the focus of sheltered workshops, a type of rehabilitation organization, reflected either a production or rehabilitation orientation depending on the dominant social philosophy toward the handicapped during the organizations’ founding period. Meyer and Brown (1977) described how the civil service movement and legislation influenced patterns of bureaucracy in finance agencies. In a study of five Central European countries in the decade following the transition from communism to free markets, Kriauciunas (2004) demonstrated that firms founded before and after the transition continued to use knowledge routines with different intensities. Applying imprinting logic to a historical case study, Johnson (2002) showed how the artistic and political conditions during the creation of the Paris Opera structured its future organizational trajectory. These studies, which situate organizational behavior within their broader historical and social context, are examples of how Stinchcombe’s imprinting theory can help researchers better understand the effect of environments on organizations.

### **Local Network Connections**

Although Stinchcombe is known for the insight that organizational structures maintain historical social influences, one of his primary examples is not an organization but the set of historical conditions resulting in the use of the craft system in the contemporary construction industry. This system, in which many suppliers are connected only for specific and limited projects, is essentially a network organization, like the fashion district described by Uzzi (1997). As Stinchcombe (1965: 153) described, the construction industry being organized around craft networks is a result of conditions at the founding of the industry, including “dense settlement . . . contracts enforceable in the law, free wage labor.” He pointed out that this system was pre-industrial and, despite much subsequent technological and organizational advancement, maintained the network structure that was imprinted during its early establishment in densely populated European cities. Just as the network connections that characterize the organization of the construction industry reflect development in densely settled areas, the social structure of many early U.S.

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communities developed during a period when network connections would be influenced by travel restrictions. Differences between when communities were established should therefore predict how locally connected their interorganizational networks are today.

While scholars may not have explicitly studied the lingering effect of founding conditions on network structures, they have described how historical conditions influence networking and have shown that network patterns, once established, are remarkably persistent. Putnam (1993), in his study of regional differences in implementing governmental programs, concluded that the success of Northern Italy in comparison to Southern Italy is a result of extensive civic networks in the north. When contrasting the historical circumstances that led to this difference, he described the revolution in governance during medieval times that resulted in new leadership in both regions. The south came under the control of the Normans, who demanded supreme fealty to the king, resulting in a society that focused connections on vertical relationships. In the north, however, a looser governance structure emerged that focused on horizontal associations. These associations became institutionalized, and as Putnam (1993) argued, led to the north's success. According to Putnam, despite being aware of the success of the north, the south wasn't able to emulate the north's more successful style of social connections because it was constrained by historical conditions. The persistence of network structures is also evident in the intercorporate network in Minneapolis–St. Paul, which maintained a local orientation despite the retirement of many key network members (Galaskiewicz, 1997). Furthermore, in a recent study of the emergence of the Broadway musical industry network, Uzzi and Spiro (2004) found that there is a remarkable persistence of the network form that was set down during the industry's emergence. As they described, despite thousands of new network members, a tremendous amount of market changes (the advent of TV and talking movies), and exogenous shocks (the Depression, and world wars), the network structure has been maintained for 90 years. Similarly, work in the strategy literature has described path dependence in the biotech network following its formation (Walker, Kogut, and Shan, 1997). A key difference between path-dependence arguments and an imprinting argument, however, is that a path-dependence perspective focuses on general persistence; in an imprinting argument, while persistence is important, equally important is how the founding social conditions influence the social form.

The initial step in examining imprinting is to identify both the founding date or period of the social form and the relevant social technology at that time. Stinchcombe (1965: 154) claimed that "the date of the (growth) spurts is highly correlated with the present social structure." The birth of the modern intercorporate network dates from the "managerial revolution" that accompanied the rapid transformation of the corporate form around the turn of the twentieth century (Chandler, 1977). Mills (1956) argued that the rise of industrialists around this time created a split in local social structure as the "new" upper class came to compete against the

"old" upper class. Identifying the importance of these changes, historians and sociologists have demonstrated that this corporate transformation created a qualitative change in urban social structures around the turn of the twentieth century, including, for example, the emergence of a new elite social class in Detroit (Zunz, 1982) and the rise of business citizenship in Cincinnati, reflecting a new elite social class connected by locally overlapping networks of social clubs, trade associations, and boards of directors (Haydu, 2002).

For the intercorporate community networks that were established during the managerial revolution, arguably the most important historical condition that influenced network structure was extremely limited travel and communication technology. Before the advent of air travel, getting from New York to Chicago was a two-day trip (Chandler, 1977), which would make intercity travel for board of directors meetings a demanding proposition. Furthermore, contemporary urban social structure was established prior to the beginning of the era of auto and air travel in American metropolises (Borchert, 1967). Borchert (1967) argued that U.S. metropolitan evolution reflects transportation technology epochs. Urban physical and social structures have changed with the innovations of the steam engine, electricity, and the internal combustion engine. It is only in the period after 1920 that technology enabled long-distance travel via car and plane, facilitating intercity travel. As a result of the difficulty of intercity travel, the intercorporate social networks of cities established in the early part of the century were locally oriented (Mills, 1956; Zunz, 1982; Hadyu, 2002).

The intercorporate networks of more recently established cities were shaped when communication and transportation issues were not as significant. Because board member choices in these communities were not as bound by geographical considerations, these cities are likely to have less locally concentrated networks. Although cities with different historical legacies may appear to be similar at present on a wide array of dimensions (including the number of public corporations, current population, and types of companies headquartered there), I expect that their networks will have much different compositions as a result of the legacy of the period when they were established.

**Hypothesis 1 (H1):** The local intercorporate networks of communities that were established before the era of auto and air travel will have a greater percentage of local network connections than cities established more recently.

Stinchcombe (1965: 155) described the significance of imprinting as the remarkable stability of "certain structural characteristics . . . over time." While it is likely that community-based intercorporate networks were locally focused during the period of their founding, the mechanisms that maintain this imprint are not clear. Stinchcombe (1991) suggested that the essential step of a social-mechanism-based approach is examining a different level of analysis than the main theory. For community networks, the behavior of the component organizations of the community system are particularly important to understand. The analog of this system-component dis-



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tion for studies of organizational-level imprinting is to study both the imprinted organizational system and the behavior of individuals within the organizational system that continues to replicate the imprinted pattern. There are two primary mechanisms that may lead the component organizations within the community network systems to continue to replicate the imprinted pattern: (1) the existence of local social institutions that provide a venue for social connection and (2) firms' emulation of locally legitimate templates of action.

## Local Connecting Institutions

Previous research has shown the importance of local institutions in replicating distinctive character in cities (Molotch, Freudenberg, and Paulsen, 2000), maintaining local networking culture (Saxenian, 1994), and, importantly for this paper, in the persistence of local elite networks (Galaskiewicz, 1991). These arguments persuasively explain that institutional linking devices are important for replicating local social structures, but those previous studies have highlighted the role that these institutions play in maintaining rather than creating the observed pattern. For example, Saxenian (1994) proposed that the structural differences between the Route 128 region and Silicon Valley were established well before the emergence of technology firms in those areas. At the outset of this industry in the 1950s, the different historical legacies of these two regions were expressed in the way the major universities competed for early governmental funding. MIT, in the Boston area, with a legacy of hierarchical organization, looked to partner directly with large government agencies and corporations. Silicon Valley did not have this experience, so when Stanford University looked to compete for funds, it looked to smaller firms, which necessitated collaborative relationships. Saxenian (1994) argued that these historical differences then became reinforced and institutionalized in Silicon Valley in the 1970s with the rise of funding networks and various business associations.

Prior work on directorship networks has identified three primary social institutions that may contribute to persistence in local network connections: exclusive upper-class clubs (Kono et al., 1998), banks (Mintz and Schwartz, 1985), and local arts and culture organizations (Ostrower, 2002). The general logic of these arguments is that these venues provide a means for local elites to interact repeatedly, which leads to a greater propensity to select other local members for their corporate boards. Having these institutions in a community would therefore result in maintenance of the imprinted pattern. Banks also have an important economic role in communities, which makes their board seats attractive for local businesses. A significant presence of these connecting institutions in communities should lead to a greater likelihood of organizations establishing local connections, perpetuating the imprinted pattern.

**Upper-class clubs.** Some theories of board of directors composition describe a social-class-based system of establishing and maintaining directorship relationships. These theories propose that inside directors seek fellow members they are

able to trust and that the common socialization and interaction of being a member of the upper class leads to that trust (Useem, 1984; Domhoff, 1998). These social class explanations focus on director-selection decisions as being driven by elite cohesion and identify upper-class clubs as a primary socialization institution for the upper class.

Given the elite status of members of public corporations' boards of directors, the exclusive upper-class club would be a significant connecting institution for this social group that may lead to a greater likelihood of firms maintaining local connections. Numerous studies have looked at the connection between upper-class-club memberships and network connections at the individual level. They have shown that upper-class-club members are more likely to hold directorships (Bonacich and Domhoff, 1981), and two or more directors are more likely to serve on the same board when both are upper-class-club members (Johnson and Mintz, 1989). This indicates that upper-class clubs and corporate directorships are both reinforcing mechanisms of upper-class cohesion and that communities with upper-class clubs would be more likely to sustain a dense intercorporate network. The presence of exclusive local upper-class clubs has been shown by Kono et al. (1998) to predict director relationships at the firm level in the mid-1960s. These researchers found support for the hypothesis that corporations in cities with upper-class clubs are more likely to maintain local industrial and financial directorship relationships. Following Domhoff (1998) and Kono et al. (1998), I argue that there is an important distinction between exclusive upper-class clubs and more ordinary social clubs that exist within communities and that as Kono et al. (1998) found of the mid-1960s, exclusive upper-class clubs in communities leads to a greater likelihood that individual organizations will establish local connections.

**Hypothesis 2a (H2a):** Organizations in communities with exclusive upper-class clubs will be more likely to have local connections than organizations in communities without exclusive upper-class clubs.

**Bank presence.** As Mintz and Schwartz (1985: 195–196) noted, “Every serious study of a major metropolitan area has discovered tight interlock networks with banks as the central nodes.” Like upper-class clubs, banks' boards of directors are also an influential connecting mechanism of the elite (Mizruchi, 1992). While banks have been seen as important to the social cohesion of the upper class, the importance of banks as a local connecting institution is based more on the logic of economic and power dependence. Industrial firms create board-of-directors connections with commercial banks to influence lending, and financial institutions interlock with industrials to gain information and access (see Baker, 1990, on investment banks). As a result, commercial banks have come to be at the center of both the national and local intercorporate networks.

An additional reason for banks' centrality in local networks may be the historical geographic restrictions on U.S. banking activity (Roe, 1994). For much of U.S. history, banking has been strictly limited to activity within each state, which is reflected in director relationships. Mizruchi (1989), for



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instance, found that being in the same state predicted whether 57 major corporations were connected indirectly through financial intermediaries. More recent research has indicated that although the national network centrality of large money-center banks declined between 1982 and 1994, the degree of banks' local connections did not substantially decline during this period (Davis and Mizruchi, 1999). As an example of this phenomenon, even as recently as 2003, the second largest commercial bank in the United States, the Bank of America, had 5 of its 14 outside director seats held by residents of its home state of North Carolina. These directors represented Charlotte Pipe and Foundry Company, General Parts, Inc., Belk, Inc., Bassett Furniture Industries, and a private individual who is chairperson of the C. D. Spangler Foundation, a Charlotte, North Carolina, organization. That an organization such as Bank of America, which has branches in 29 U.S. states, the District of Columbia, and 31 foreign countries, continues to maintain such a locally oriented board indicates the deep historical ties of commercial banks to their headquarters community. Because of the localness typical of U.S. bank boards of directors, it is likely that the more banks that are headquartered in a community, the more local connections there will be.

**Hypothesis 2b (H2b):** The greater the presence of commercial banks in a community, the greater the likelihood that organizations in that community will have local network connections.

**Arts and culture organizations.** Like exclusive upper-class clubs and banks, nonprofits and their boards of directors are an important influence on the degree of local elite cohesion. In a study of Minneapolis, Galaskiewicz (1991, 1997) credited the rich associational life, including nonprofits and other community associations, as being at least partially responsible for how the social network that connected local organizations was able to renew itself after the retirement of many key network members. But not all nonprofit organizations are equally important as connecting mechanisms of the local elite. Arts and cultural organizations in particular have been identified as the types of institutions that contribute the most to local elite cohesion. DiMaggio and Useem (1978) maintained that high arts organizations and their boards unify the local elite and set it apart. Ostrower (2002), who conducted an in-depth qualitative study of four arts organizations in two communities, suggested that most trustees of these organizations are social elites and that while these institutions have more recently begun appealing to the broader society, part of their implicit mission is serving the elites' interests. Findings of a historical study of museum, hospital, and United Way boards in Cleveland and Boston showed that arts board members were more likely to have attended elite schools and to be in social registers than were the United Way or hospital board members (Abzug et al., 1993). Thus in terms of the type of nonprofit organization most associated with the cohesiveness of local networks, it is likely that arts and culture organizations play the largest role.

**Hypothesis 2c (H2c):** The greater the presence of arts and culture organizations in a community, the greater the likelihood that organizations in that community will have local network connections.

### **Locally Legitimate Templates of Action**

While connecting institutions are important to understanding how local elite members within a community interrelate, boards of public companies are significant corporate symbols that are actively managed for organizational legitimacy (Selznick, 1957; Pfeffer and Salancik, 1978). Consistent with new institutional theory (Scott, 2001) and the many examples of how members of social networks rely on geographically proximate or prominent actors as models for action (e.g., Davis and Greve, 1997), it is plausible that new companies would look to other local firms for the most appropriate board design. Davis and Greve (1997) theorized how this would happen for another corporate governance practice, the golden parachute, explaining that differences in local norms may influence governance practices. In their sample, the majority of firms in Dallas adopted a parachute by 1983, indicating a greater cultural legitimacy, while only one firm in San Jose had adopted one by 1990. They stated that even without direct connections between local firms, "executives in St. Louis are likely to be particularly attuned to the practices of Anheuser-Busch, a highly prominent local business" (p. 14).

In considering that direct connections between firms are not necessary for practices to spread, Strang and Meyer (1993: 490) argued that "linkages may be cultural as well as relational. That is, the cultural understanding that social entities belong to a common social category constructs a tie between them." As an example, they note that educational practices spread rapidly among American states with little or no interdependence or connection among the actors. As suggested in Davis and Greve (1997), categories of cultural identification such as co-location in a community create important reference groups and are influential when an organization is imitating a practice.

The importance of local culture, and in particular a local definition of legitimate action, may be particularly salient for the newer organizations that enter these local networks and are therefore ultimately responsible for any maintenance of the imprint that may occur. Local communities are seen as particularly significant for smaller and newer firms (Aldrich, 1999; Romanelli and Schoonhoven, 2001), and thus newer entrants to these local social systems probably rely on local organizations for cues about what is appropriate. Similar to how the network is a repository of information about appropriate partners in alliances (Gulati and Gargiulo, 1999), community networks are likely to be repositories of information for new entrants. This is consistent with Meyer and Rowan's (1977) argument that templates of action are a powerful force in the reproduction of social structures. For instance, a newly public firm, entering the St. Louis intercorporate network and unsure of how to structure its first board, might look to other more established St. Louis actors, such as Emerson Electric (41 percent of board connections are with other St. Louis firms) and Ralston Purina (63 percent of board connections

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are with other St. Louis firms). A new firm in Phoenix might look to Dial Corporation (only 12 percent of board connections are with other Phoenix firms). Similar to the existence of a "city tradition" that is reflected in denser connections between local organizations and community social patterns that are perpetuated through time (Molotch, Freudenberg, and Paulsen, 2000), I argue that it is by this process of organizations, particularly newly established ones, emulating the practices of other local organizations that the network imprint is maintained.

The above argument postulates that because corporate boards of directors are key symbols of legitimacy, it is likely that firms look to other local firms when structuring their board. New institutional theory would predict that industry peers would be a source of appropriate behavior. Because of the importance of local communities for smaller and newer firms, however, the network of connections and behavior of other more legitimate local firms will also be important templates of action. As a result, the locally imprinted pattern is perpetuated over time.

The argument above suggests two hypotheses. First, as Davis and Greve (1997) suggested, because there is variance in the norms of different communities, in early-established communities where a norm of local connection would have developed, organizations will have a greater propensity to connect locally, even when controlling for the institutional factors described above. Second, in answering the question of how this norm gets perpetuated over time, it is likely that more visible and prominent firms serve as especially important templates for newly established firms.

**Hypothesis 3a (H3a):** Controlling for local institutional presence and organizational and community economic and social characteristics, organizations in communities that were established before the era of auto and air travel are more likely to form local intercorporate network connections than are organizations in communities that were established more recently.

**Hypothesis 3b (H3b):** Newly founded firms in communities in which prominent firms have more locally focused networks are more likely to establish local ties.

## DATA AND METHODS

### Units of Analysis and Sample

This study was conducted at two levels of analysis: the local community network and the component organizations of the community networks. I defined communities as U.S. Census Metropolitan Statistical Areas (MSAs). This is the most commonly used operationalization of a community, as MSAs are designed to capture not just the traditional political boundaries of a city but how economically and socially integrated a region is. The U.S. Census Bureau described these areas as a "core area containing a large population nucleus, together with adjacent communities having a high degree of economic and social integration with that core" ([www.census.gov/population/www/estimates/aboutmetro.html](http://www.census.gov/population/www/estimates/aboutmetro.html)). For example, the Chicago MSA includes Cook County as well as eight other counties that surround it.

The sample of board of director members used to construct the community networks was taken from a list of all NYSE and NASDAQ National Market firms in 1986 and 2000 as detailed in Compact D/SEC. I chose these two markets because they are the primary national markets and include the vast majority of actively traded public companies (organizations on the other national markets, AMEX and NASDAQ Over the Counter, are mostly peripheral). The 1986 board of director sample was composed of the 33,282 directorships associated with 3,415 corporations. For 2000, the sample included 47,566 directorships associated with 5,623 corporations. From each of these datasets, I constructed subsamples representing the 51 largest Metropolitan Statistical Areas.<sup>1</sup> Organizations were placed in MSAs based on corporate headquarters location. Of the 51 communities in 1986, the mean number of headquartered firms was 47, the median was 30. The highest numbers were New York (234), Chicago (149), and Los Angeles (134), and the lowest numbers were in San Antonio, TX, Greensboro, NC, New Orleans, LA, and Salt Lake City, UT, each with 14. Tracking the same 51 communities in 2000, the mean number of headquartered firms was 71, and the median was 44. The highest numbers were in New York (269), San Jose, CA (259), and Boston (216), and the lowest numbers were in Tulsa, OK (14), New Orleans, LA (13), and Dayton, OH (13).

To understand the potential social mechanisms involved in imprinting, I also examined the behavior of the component organizations of the 51 networks in both 1986 and 2000. This included 1,943 total firms in the 51 communities in 1986, and 3,009 total firms in 2000. Because of missing values, these total samples were reduced to 1,898 and 2,964, respectively. Additionally, to test H3b, on the role of prominent firms on new entrants to these networks, I extracted a subsample from the 2000 data of the 1,823 firms with complete data that were founded between January 1, 1987, and August 2000.

### Dependent Variables

Although many measures have been used to characterize networks (Wasserman and Faust, 1994), because I was interested in differences in the prevalence of local network connections at the community level, as a dependent measure in the community network analysis, I examined the number of direct connections between local companies compared with the total number of direct network connections. While this is not a standard network measure, I used it because standard measures do not capture how locally focused a network is in relation to total network connections. This measure also enabled me to include neutral ties in my model. Board of director ties are typically characterized along three dimensions: received, sent, and neutral ties. A received tie is an officer of a corporation sitting on the board of the focal company, e.g., the chief executive officer (CEO) of AT&T sitting on the board of Citigroup is a received tie for Citigroup. A sent tie is an officer of the focal company sitting on the board of another company, e.g., the Citigroup CEO sitting on the board of AT&T would be a sent tie from the perspective of Citigroup. Neutral ties are connections made by someone

1

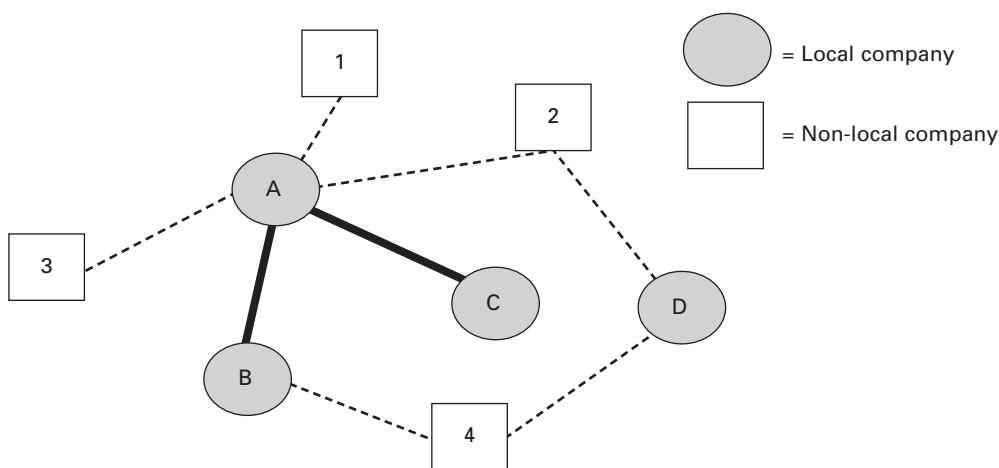
Initially, my goal was to extract a community-based subsample representing the 50 largest community networks in the United States in 1986, but in 1986, more than one community had 14 companies, the cutoff point to be included in the top 50; thus, the sample consists of 51 communities.

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who is not an officer of either of the connected corporations, e.g., Walter Mondale sitting on the boards of Minneapolis-based companies Northwest Airlines and United Healthcare. There is some evidence that neutral connections are important to understanding the cohesion of networks (Davis, Yoo, and Baker, 2003), so it is important to consider them when measuring how locally focused community networks are.

Figure 1 illustrates this measure. The gray circles represent local companies, and the squares represent non-local companies. There are two fully local direct connections (A-C and A-B), and eight total connections in the network (A-3, A-1, A-B, A-C, A-2, B-4, D-2, and D-4). To represent the proportion of local connections in this network, one would divide two by eight and, as a result, get .25.

**Figure 1. Illustration of connections in a network.**



For the organizational-level analyses, I followed Kono et al. (1998) and focused only on local connections created by directional ties. As Kono et al. (1998) explained, at the organizational level, these are the most meaningful to understand because they are consciously managed by firms. Furthermore, at the organizational level, neutral ties are more difficult to assess, since the individuals involved do not have a primary affiliation with the connected firms (e.g., Walter Mondale is not an officer of either Northwest Airlines or United Healthcare). Whereas Kono et al. (1998) examined both sent and received ties, however, I decided to examine only received ties (i.e., officers of other corporations that sit on the board of the focal firm). These ties better capture the logic of my argument that it is organization-level behavior that corresponds to the imprinted pattern. Sent ties (in which an officer of the focal firm sits on another board) are more reflective of a decision of another firm and the individual officer invited to be on that firm's board. I measured this dependent variable as the count of the total received local ties for each firm.

## Independent Variables

*Early establishment.* To understand the establishment of cities and how this relates to intercorporate network struc-

ture, a key period is the early part of the twentieth century. Historical records support the importance of this period in the development of the intercorporate network. Chandler (1977) suggested that it was in the period prior to World War I that the modern business enterprise was established, with the emergence of large business organizations and the professionalization of management, and Roy (1997) described the years 1901–1904 as the peak of the corporate revolution. Chandler (1977: 455) described this period of the birth of the modern corporation and urban social structure, similar to Stinchcombe's (1965) "growth spurt," as a period of fundamental change in organizations: ". . . a businessman of today would find himself at home in the business world of 1910, but the business world of 1840 would be a strange, archaic and arcane place." This time period witnessed the emergence of the large corporation, and organizational elites rose to community power and came to dominate local social life, which resulted in the emergence of the modern elite social structure. This transition to the new elite was noted by Mills (1956) and by Haydu (2002: 1459–1460), who described this occurring around the turn of the century in Cincinnati and suggested that "there is evidence for the development of wider solidarities and civic identities among proprietary capitalists in other cases, including Pittsburgh (Ingham 1978), Wilmington (Hoffecker 1975), Providence (Gilkeson 1986) and Harrisburg (Eggert 1993)." An important concomitant to the establishment of the modern urban elite social structure is the difficulty of intercity travel during the early 1900s. Not until 1920 did American metropolises enter the era of auto and air travel (Borchert, 1967).

In the urban studies literature, the population of 1910 is typically used as a proxy to operationalize the degree of early business establishment in communities (Norton, 1979). Because population growth prior to 1910 was mainly a result of industrialization, the level of population at that time is a useful measure of the degree of business establishment in a community (Norton, 1979). For this study, however, I attempted to measure the phenomenon more directly and obtained a measure of the number of incorporated firms in each city in 1905.<sup>2</sup> These data are from the *Census of Manufacturers* for each state in 1905 (U.S. Bureau of the Census, 1906), the closest measurement to 1910 of this concept I could find. This variable has a mean of 300 incorporated firms per community and ranges from 2,797 incorporated firms in New York, down to the bottom seven communities, which were not included in these volumes and received a value of 0 (cities with populations of less than 8,000 were not included). Because of extreme values, this variable was logged (+1).

*Upper-class club.* Following Kono et al. (1998), I used the upper-class social club list established by Domhoff (1998) to control for the level of local upper-class cohesion (see Kono et al., note 2, for Domhoff's process). These represent the most exclusive upper-class clubs, which Kono et al. (1998) found to be an important differentiator among communities. These are different than the social clubs that exist in all cities and represent the most exclusive meeting grounds of the elite. Of the 51 cities in the sample, 23 have at least one

**2**

Following Norton, I also used the population of 1910 as an alternative operationalization of this concept. These different operationalizations are correlated at .94 and return quite similar results.



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upper-class club, and 28 do not have an upper-class club. I used a dummy variable to indicate if a community had an upper-class club or not.

*Number of banks headquartered.* The total number of banks in each community was tabulated and included in the analysis as a control. The number of banks was based on Standard Industrial Classification (SIC) codes associated with the organization in the Compact D/SEC database. These included 2-digit SIC codes 60, 61, and 67. Because banks are typically central in local networks, a greater number of banks will lead to a more locally connected network. In 1986, the average number of banks was 3.86, with the variable ranging from 0 (Dayton, OH; Ventura, CA; Nassau Suffolk, NY) to 12 (New York), and in 2000, the average number of banks was 3.67, with the variable ranging from 0 (Stamford, CT; Richmond, VA; Ventura, CA; San Diego; Denver) to 16 (New York). Because of extreme values, this variable was logged (+1).

*Arts and culture organizations.* A measure of arts and culture nonprofit organizations was also included in the models. For each community, I tabulated the total number of these organizations with more than \$10,000,000 in assets. Examples of these organizations are museums, symphonies, and operas. The asset cutoff is a result of data limitations from the source of the data: the National Center for Charitable Statistics at the Urban Institute ([www.nccs.urban.org](http://www.nccs.urban.org)). In 1986, the mean number of these organizations was 1.7, ranging from New York with 19, down to 19 communities with none. In 2000, the mean number of these organizations was 6.4; 10 cities had more than 10 and New York had the most, with 54. Five of the cities had none. Because of extreme values, this variable was logged (+1).

*Prominent firm percent local connections.* To understand the role of the most prominent local firms in the replication of these social structures, at the organizational level, I created a variable that measured the percentage of local received connections held by prominent firms. I operationalized prominent firms based on the 75th percentile and higher of firms in each community based on firm sales. Thus, this group represents the largest 25 percent of firms in each community. To calculate the measure for this group in each community, I summed the total number of received connections and divided this value by the total number of received connections. Thus, this variable represents a community-level profile of the propensity of prominent firms to create local connections. Because I used this variable only in analyses of newly founded firms between 1987 and 2000, I measured this variable in 1986 only. This variable has a mean of 33 percent, ranging from 58 percent in Milwaukee to the following eight communities whose prominent firms had no local connections: Oakland, CA; Miami, FL; Ventura, CA; Tampa, FL; Salt Lake City, UT; Middlesex, NJ; Wilmington, DE; and Newark, NJ.

## Control Variables

I included two main types of control variables in the analysis: (1) features of communities that are included in both the community-network-level and organization-level analyses and

(2) features of organizations that are only in the organizational-level analyses.

Important features of communities that may influence the dependent variable include the size of the corporate community and the potential supply of available directors (*number of companies headquartered*), as well as information on the types and concentration of the local companies. Measures reflecting the percentage of local firms that engage in manufacturing (*percentage manufacturing*) or service (*percentage service*) were also created and included in the analyses to capture how concentrated communities are with respect to those two important types of industries. Manufacturing firms were defined as those within SIC groups 2 and 3, service firms as those within SIC groups 7 and 8. I coded each firm based on its SIC group and then calculated the percentage of firms in a community that were manufacturing or service. So, for example, in 1986, Boston had 115 firms, 62 manufacturing and 24 service, so it had 54 percent manufacturing and 21 percent service. For 1986, percentage manufacturing ranged from 75 percent to 6 percent (highest in Minneapolis, MN; Dayton, OH; and San Jose, CA; lowest in Wilmington, DE; Nashville, TN; Birmingham, AL), and percentage service ranged from 31 percent to 0 percent (highest in Washington, DC; Nashville, TN; San Francisco; lowest in Fort Worth, TX; Greensboro, NC; Hartford, CT). For 2000, percentage manufacturing ranged from 60 percent to 8 percent (highest in Cleveland, OH; Portland, OR; San Jose, CA; lowest in Washington, DC; Nashville, TN; New Orleans, LA), and percentage service ranged from 55 percent to 4 percent (highest in Nashville, TN; San Francisco; Seattle, WA; lowest in Greensboro, NC; Birmingham, AL; Wilmington, DE). To pick up effects beyond those associated with different industries, I also created an index of *concentration* for each community based on the 2-digit SIC code. This measure is similar to a Herfindahl index. I took the percentage of companies in each community that were in each 2-digit SIC code and then calculated the sum of the squares of those percentages. This assesses the overall industrial concentration of each community. In 1986, the most concentrated communities were Ventura, CA; San Jose, CA; and Tulsa, OK; least concentrated were New York, Chicago, and Los Angeles; in 2000, the most concentrated communities were San Francisco, San Jose, CA; and Tulsa, OK; least concentrated were Philadelphia, Chicago, and Dallas.

Other potentially relevant factors at the community level include the relative age of firms and the distance between communities. Because the community-level effects may be a result of older companies in the earlier established communities, I constructed a measure of the percentage of firms in the community that were established on a major stock exchange prior to 1973 (*percentage old*). I used 1973 as the cutoff for convenience reasons, because by this date, the CRSP database contained both NYSE firms (it began tracking July 2, 1962) and NASDAQ firms (it began tracking December 14, 1972). The first date in CRSP following the beginning of tracking of these markets reflects the date of establishment of a firm on the given exchange.<sup>3</sup> For the 1986 analy-

**3**

This measure may be slightly biased because firms that have changed exchanges would appear to be founded more recently. Any risk of this is very slight, however, because virtually all exchange changes are firms moving from NASDAQ to NYSE (Rao, Davis, and Ward, 2001), and since this variable was operationalized as before and after 1973, only NASDAQ firms that were founded on the NASDAQ in the period between 1971 (when the NASDAQ exchange was founded) and 1972 and switched to the NYSE in 1973 or later would be mis-coded.

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sis, approximately 77 percent of companies had been established before 1973, with the variable ranging from 100 percent (Birmingham, AL) to 50 percent (Stamford, CT). By 2000, the overall percentage had dropped to 27 percent, with the variable ranging from 69 percent (Dayton, OH) to 6 percent (San Antonio, TX). This dramatic drop between 1986 and 2000 reflects both the growth in the total number of public companies and the turnover of corporations. Although the fact that the vast majority of companies were established recently may be a surprise, in fact it is consistent with previous accounts of the extensive and frequent turnover of large corporations (e.g., Navin, 1970; Davis and Stout, 1992; Mizruchi, Stearns, and Marquis, 2004). Furthermore, while this measure may not seem to capture how “old” the companies in a community are, any error or bias will be conservative with respect to the dependent variable because many of the companies that were established prior to 1973 were very likely established after the advent of air travel. Furthermore, a variable indicating location in a community that is *within 100 miles* of another major U.S. community was included in the analysis. Thirty-one of the 51 communities were within 100 miles of another. The 100-mile threshold was based on examination of distances between the communities in the sample and informally estimating the likelihood of travel between cities. There was a cluster of communities around 80 to 90 miles from one another that seemed to be plausible locations to travel for director meetings (e.g., Charlotte and Greensboro, NC, are about 85 miles apart; Chicago and Milwaukee, WI, are about 90 miles apart; Washington, DC, and Richmond, VA, are about 95 miles apart). This measure included, for example, all communities in the northeastern U.S. and northern California, as well as other communities within 100 miles of another. If distance is a factor in determining directorships, communities that are closer to other communities should have fewer local connections. For example, Milwaukee firms may rely less on local connections because they can recruit directors of Chicago companies.

As an additional control for upper-class cohesion, I created a measure for the percentage of CEOs who attended an elite college or university (*elite schooling*, list of schools from Useem and Karabel, 1986). To construct this city-level measure, I took the 1989, 1991, and 1993 lists of the “Corporate Elite” in *Business Week* magazine (1989, 1991, 1993). These lists include the academic backgrounds and other characteristics of the CEOs of the 1000 U.S. companies in the *Business Week* 1000 (this list seems to have appeared annually only from 1989 to 1993). After entering all three of these years into a database, I had a list of the educational backgrounds of 1,663 separate individuals who at one point in the 1980s or 1990s were CEOs of one of the largest 1000 corporations in the U.S. Then, for each city, I took the total number of CEOs from elite schools and divided it by the total number of CEOs from that community in the *Business Week* list to get a percentage of CEOs in each community who attended elite schools. Because of degree-of-freedom issues, and since there are other measures of upper-class cohesion in the community analysis, this variable was only included in the organizational-level analyses. Across all 51 communities, there is a

mean of about 17 percent of CEOs who attended elite colleges or universities. Many southern communities, e.g., San Antonio, TX; Birmingham, AL; Oklahoma City, OK; Richmond, VA; and New Orleans, LA, have no CEOs of major companies from elite colleges. Boston, MA, Phoenix, AZ, Miami, OH, Dayton, OH, and Ventura, CA all had over 30 percent of CEOs who attended elite colleges.

At the organizational level, to operationalize the concept of each organization potentially being part of an industrial district, I created a measure of *local constraint*, based on each company's 2-digit SIC code, which was a sum of the number of local companies that were in 2-digit SIC codes that had input-output relationships with the focal company's primary SIC code. This measure was based on the Bureau of Economic Analysis's input-output tables, which describe for the entire U.S. economy the total value of inputs (supplies) and outputs (sales) of each focal industry and the industry associated with those inputs and outputs. For 1986, I used the 1987 tables, and for 2000, I used the 1997 tables. These data are available only at the industry level, and other scholars have used various methods to extrapolate industry constraint to describe firm-level relationships (Galaskiewicz et al., 1985; Palmer, Friedland, and Singh, 1986; Mizruchi, 1989). Because I was interested in understanding how being in certain localities might influence a firm's propensity to create local connections, I tabulated for each firm the number of firms within the community that were in 2-digit SIC codes that had input or output relationships with that focal firm's SIC code. As an example, in the 2000 data, the community that had companies with the highest values in this measure was San Jose, which is consistent with Saxenian's (1994) characterization of the dense connections among Silicon Valley firms. For instance, within the San Jose MSA, 73 organizations had 2-digit input-output relationships with Intel Corporation.

I also created indicator variables if the focal organization was a *manufacturing, service, or bank firm*. These variables were based on the same criteria as above (manufacturing firms: SIC groups 2 and 3; service firms: SIC groups 7 and 8; and bank firms: 2 digit SIC codes 60, 61, and 67). These variables capture any differences between different types of firms in the likelihood of creating a local tie. Of the 1,943 total firms in the 1986 sample, 844 are manufacturing firms, 257 are service firms, 197 are banking firms, and the remaining 645 are in none of these three categories. Of the 3,009 total firms in the 2000 sample, 1,086 are manufacturing firms, 980 are service firms, 187 are banking firms, and the remaining 1,130 are in none of these three categories.

One important alternative reason why firms create local connections is that their competitors and industry peers may serve as an additional template of action. To control for how firms may imitate their industry peers, I created a variable, *industry localness*, that measures, for each firm's 2-digit SIC code, the extent to which firms in that SIC code create local connections. This variable was measured as the percentage of total connections in the group that were from local companies. So, for example, if all the firms in a certain SIC code had a total of 1000 directorship connections, 300 of which

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were to firms within their own community, that SIC code would have an industry localness of 30 percent.

At the organizational level, I controlled for the total *number on board* of directors. Also, since board membership is more prestigious for larger and better performing firms, I also controlled for firm sales (*total sales*) and the relative profitability of the firm, measured as the firm's standardized (via z-score) *return on assets* versus 2-digit SIC code peers.

## Models

The dependent variable for the community network analysis is a percentage, so I used Tobit regression to test hypothesis 1. Tobit, which corrects for situations in which the distribution of the dependent variable is censored on either side, is appropriate when the dependent variable is expressed as a percentage, because the distribution is bound on the lower end by 0 and on the upper end by 1 (Long, 1997).

Because the dependent variable in the organization-level analyses is a count, I considered two primary ways to analyze these data. The traditional method, Poisson regression, is appropriate when the mean and variance of the dependent variable are similar. But when the variance is greater than the mean (which is the case here), the data are considered overdispersed, and negative binomial regression is the most appropriate specification. For this analysis, I used the negative binomial regression program in Stata 7. A further issue with these data is that not all observations are independent, as community-level data are identical for all organizations in each community. To correct for this, I used a random effects model and specified the grouping variable as the community.

## RESULTS

Tables 1–4 present the descriptive statistics and correlations for the four sets of analyses (community-level and organizational-level analyses for both 1986 and 2000). Because there are high correlations between some of the variables, there is a potential for multicollinearity. There is no accepted methodology for treating this issue, though one way to make sure that effects in the full model are not biased is to enter highly correlated and substantive variables into the analyses separately. I conducted additional analyses, not presented here, adding each of the independent and highly correlated vari-

Table 1

### Descriptive Statistics and Correlations for Variables in Community-level Analysis, 1986

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Local connections	.288	.144										
2. Early establishment	4.369	2.112	.534									
3. Upper-class club	.451	.503	.477	.575								
4. Number arts	.645	.718	.458	.581	.560							
5. Number banks	1.430	.578	.454	.487	.512	.616						
6. Number HQs	3.556	.721	.267	.355	.487	.641	.531					
7. % Manufacturing	.391	.169	-.090	.006	.065	.042	-.312	.323				
8. % Service	.116	.065	-.158	-.012	-.009	.236	.139	.407	-.074			
9. % Old	.765	.097	.246	.220	.168	.183	.352	-.031	-.252	-.020		
10. Concentration	1016.4	500.6	-.333	-.420	-.483	-.474	-.616	-.568	.106	-.187	-.087	
11. Within 100 miles	.608	.493	-.365	-.164	-.241	-.116	-.213	.166	.277	.116	-.212	.069

Table 2

<b>Descriptive Statistics and Correlations for Variables in Community-level Analysis, 2000</b>												
Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Local connections	.188	.095										
2. Early establishment	4.369	2.112	.506									
3. Upper-class club	.451	.503	.514	.575								
4. Number arts	1.578	.903	.403	.609	.594							
5. Number banks	1.275	.733	.342	.357	.260	.562						
6. Number HQs	3.910	.835	.329	.299	.474	.558	.628					
7. % Manufacturing	.338	.128	.079	-.054	.131	-.069	-.126	.178				
8. % Service	.230	.121	-.020	.119	.127	.073	.266	.556	-.153			
9. % Old	.267	.125	.088	.218	-.032	.044	-.017	-.424	-.001	-.594		
10. Concentration	1056.5	432.2	-.163	-.175	-.138	-.348	-.186	-.043	-.056	.294	-.321	
11. Within 100 miles	.608	.493	-.159	-.164	-.241	.091	.096	.075	.049	-.031	.146	.036

Table 3

<b>Descriptive Statistics and Correlations for Variables in Organizational-level Analysis, 1986</b>												
Variable	Mean	S.D.	1	2	3	4	5	6	7	8		
1. Local connections	.481	.855										
2. Early establishment	5.21	2.093	.160									
3. Upper-class club	.667	.471	.160	.659								
4. Number arts	1.115	.899	.102	.694	.627							
5. Number banks	1.739	.648	.101	.638	.653	.796						
6. Number HQs	4.158	.791	.026	.011	-.079	-.048	.690					
7. % Manufacturing	.428	.147	-.100	.086	.035	.337	-.266	-.173				
8. % Service	.133	.061	-.006	.316	.185	.516	.226	-.027	.178			
9. % Old	.767	.088	.102	.348	.321	.318	.386	-.213	.068	.168		
10. Concentration	2.428	7.355	-.045	.181	-.024	.281	.390	.090	.448	.325		
11. Within 100 miles	.693	.461	-.078	.037	-.189	.071	.100	.323	.196	.277		
12. Elite schooling	.181	.091	-.061	.166	.019	.236	.110	.223	.380	.236		
13. SIC local	.397	.092	.143	.058	.026	.038	.074	-.123	.066	-.027		
14. Number board	10.26	4.549	.385	.130	.082	.091	.126	-.152	-.040	.041		
15. Sales	12.50	1.883	.242	.161	.010	.118	.126	-.065	-.061	.030		
16. ROA	-.001	.730	.068	.073	.039	.047	.060	.017	-.024	.031		
17. Manufacturing firm	.435	.496	-.088	.004	-.018	-.024	-.089	.298	-.055	-.027		
18. Service firm	.131	.338	-.069	.023	.013	.080	.060	-.026	.177	.170		
19. Bank firm	.101	.301	.261	-.024	-.028	-.042	.036	-.132	-.033	-.086		
Variable	9	10	11	12	13	14	15	16	17	18		
10. Concentration	.100											
11. Within 100 miles	-.146	.159										
12. Elite schooling	.005	.407	.287									
13. SIC local	.075	.054	-.025	-.014								
14. Number board	.142	.086	-.037	-.034	.187							
15. Sales	.114	.052	.034	-.003	.066	.556						
16. ROA	.046	.025	.015	-.027	.076	.079	.244					
17. Manufacturing firm	-.068	.012	.071	.051	-.442	-.215	-.098	.025				
18. Service firm	.032	.088	.084	.088	.186	-.104	-.134	-.036	-.341			
19. Bank firm	.066	-.041	-.105	-.049	.373	.405	.078	-.007	-.294	-.130		

ables separately to the base model, with no significant change in magnitude or sign from the full models presented here. Furthermore, multicollinearity does not influence model fit, so having a statistically significant increase in model fit corroborates the significance levels of the coefficients.

Results of the regression equations are presented in tables 5, 6, and 7. Table 5 includes all of the models at the community level for 1986 and 2000. The results provide strong support for H1, that earlier-established communities will have a greater percentage of local network connections. For 1986, model 1 presents a baseline model with controls. Model 2 presents the baseline model with the early-establishment



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Table 4

### Descriptive Statistics and Correlations for Variables in Organizational-level Analysis, 2000

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9
1. Local connections	.349	.755									
2. Early establishment	5.287	2.122	.068								
3. Upper-class club	.633	.482	.046	.645							
4. Number arts	2.019	1.026	.029	.684	.619						
5. Number banks	1.668	.761	.029	.512	.340	.710					
6. Number HQs	4.607	.791	.040	-.178	-.122	-.373	.587				
7. % Manufacturing	.353	.129	-.085	.113	.031	.063	-.384	-.240			
8. % Service	.281	.113	.009	.012	-.118	-.058	.232	.216	.058		
9. % Old	.232	.105	.103	.272	.149	.260	.163	-.105	-.645	-.169	
10. Concentration	6.772	21.18	-.034	.193	.015	.378	.004	-.239	.167	-.036	.149
11. Within 100 miles	.683	.465	-.058	.066	-.215	.203	.323	-.328	-.042	.222	.001
12. Elite schooling	.189	.091	-.090	.153	-.023	.207	.179	.009	.433	.147	-.280
13. SIC local	.320	.076	.115	-.011	.000	.007	.011	-.082	-.114	.056	.096
14. Number on board	8.410	3.044	.184	.118	.063	.124	.096	-.128	-.184	-.086	.260
15. Sales	12.34	2.266	.170	.083	.034	.094	.039	-.071	-.245	-.019	.305
16. ROA	.004	1.118	.010	.005	.020	.011	-.020	-.006	-.069	-.004	.068
17. Manufacturing firm	.361	.480	.012	-.033	-.028	-.088	-.103	.269	-.073	.164	-.014
18. Service firm	.327	.469	-.059	.025	.006	.008	.031	-.067	.141	-.136	-.092
19. Bank firm	.062	.241	.059	.012	-.022	.033	.095	-.082	-.035	-.080	.075
20. Prominent % local*	.331	.174	.068	.600	.683	.470	.396	.408	-.035	-.129	.304
Variable	10	11	12	13	14	15	16	17	18	19	
11. Within 100 miles	.118										
12. Elite schooling	.368	.359									
13. SIC local	-.022	-.079	-.099								
14. Number on board	.052	-.114	-.120	.169							
15. Sales	.013	-.140	-.137	.161	.505						
16. ROA	.030	-.050	-.033	.009	.056	.161					
17. Manufacturing firm	-.053	.017	-.004	.010	-.088	.046	.037				
18. Service firm	-.010	.044	.072	-.314	-.192	-.114	-.025	-.524			
19. Bank firm	.039	-.049	-.033	.163	.292	.043	.010	-.193	-.179		
20. Prominent % local*	.050	-.026	-.051	.025	.060	.033	.040	-.032	.008	-.008	

\* Descriptive statistics and correlations for this variable are based on the sample of 1,823 firms founded between January 1987 and August 2000.

variable included; it is statistically significant, and adding it results in significant increase in model fit over the baseline model, supporting H1. There were no predictions for the institutional variables at the community level, but because they are important controls, and to make the analyses more comparable with the organizational-level analyses, I included a model (model 3) that separately presents all of the institutional variables: upper-class club, number of banks, and arts and culture organizations. In this model, the arts and culture organizations variable is only marginally significant, and the overall model fit is only a marginal improvement over the baseline. Model 4 includes all of the variables. In this model, only the early-establishment variable is significant, further confirming H1.

For the community-level analyses for 2000, model 5 is the baseline model, and model 6 has the controls and early-establishment variable. As for 1986, early establishment was statistically significant, and this added significantly to the overall model fit, indicating that for both 1986 and 2000, early-established communities have more locally connected networks. Model 7 contains the institutional variables with the baseline, and in this model, the existence of an upper-class club is significant. In model 8, the full model for the

Table 5

**Tobit Regression Results for Community-level Analyses, 1986 and 2000\***

Variable	1986 Models				2000 Models			
	1	2	3	4	5	6	7	8
Early establishment		.024*** (.008)		.020** (.010)		.018*** (.006)		.016** (.007)
Upper-class clubs			.035 (.043)	.008 (.043)			.071** (.032)	.054** (.032)
Number arts			.047* (.033)	.023 (.034)			.000 (.021)	-.020 (.022)
Number bank			.009 (.050)	-.001 (.048)			.026 (.023)	.023 (.022)
Number HQs	.088** (.035)	.067** (.033)	.039 (.045)	.052 (.044)	.068*** (.019)	.046** (.019)	.021 (.029)	.027 (.028)
% Manufacturing	-.111 (.119)	-.113 (.111)	-.078 (.135)	-.104 (.130)	-.042 (.099)	-.011 (.092)	-.002 (.104)	-.015 (.100)
% Service	-.782** (.293)	-.654** (.276)	-.674** (.300)	-.645** (.300)	-.159 (.144)	-.210 (.135)	-.120 (.139)	-.212 (.140)
% Old	.248 (.177)	.156 (.168)	.161 (.182)	.139 (.176)	.203 (.125)	.033 (.130)	.092 (.126)	-.014 (.131)
Concentration	-4.3E-05 (4.5E-05)	1.7E-05 (4.3E-05)	-2.6E-05 (4.5E-05)	-1.6E-05 (4.4E-05)	-2.0E-06 (3.1E-05)	4.0E-08 (2.9E-05)	-4.7E-06 (3.0E-05)	-6.3E-05 (2.9E-05)
Within 100 miles	-.096*** (.035)	-.082** (.033)	-.074** (.036)	-.076** (.035)	-.049* (.025)	-.028 (.024)	-.025 (.025)	-.012 (.025)
Constant	.019 (.191)	.011 (.178)	.145 (.195)	.067 (.192)	-.050 (.098)	-.011 (.091)	.059 (.102)	.059 (.098)
Observations	51	51	51	51	51	51	51	51
LR $\chi^2$	25.20	32.59	28.97	33.15	15.36	23.07	22.80	26.34
$\chi^2$ change		7.39***	3.77*	7.95***		7.71***	7.44***	10.98***
Comparison model		1	1	1		5	5	5

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ ; two-tailed for controls, one-tailed for hypothesized effects.

\* The dependent variable is the percentage of all local connections (received, sent, and neutral) within the local network system. Standard errors are in parentheses.

2000 community analysis, the early-establishment variable is significant, and having an upper-class club is marginally significant. The key point to take away from these two sets of analyses is that the effect of a historical imprint on local networking was consistent in both the 1986 and 2000 community networks, giving full support to H1 and indicating that the legacy of historical social structure leads to a greater likelihood of current-day communities having locally connected networks.

Table 6 presents the results of the organizational level analyses for both 1986 and 2000. In this table, there is mixed and inconsistent support for hypotheses 2a–2c, that different institutional connecting mechanisms will influence local networking, and strong support for hypothesis 3a, that a geographically based template of action exists in community networks. Model 9 presents the baseline organizational-level regression model for 1986, and model 10 includes the early-establishment variable, which is significant and adds to the overall model fit, giving support to H3a. Model 11 has all of the institutional factors, and in this model, the upper-class-club prediction (H2a) was supported, consistent with Kono et al. (1998). In the full model for 1986, model 12, both the early-establishment and upper-class-club variables maintain significance, indicating that having an upper-class club is one mechanism that leads to greater local connections and that,

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Table 6

### Random Effects Negative Binomial Regression Results for Organization-level Analyses, 1986 and 2000\*

Variable	1986 Models				2000 Models			
	9	10	11	12	13	14	15	16
<i>Community</i>								
Early establishment		.107*** (.031)		.087*** (.036)		.052** (.029)		.073*** (.035)
Upper-class club			.395*** (.139)	.305** (.131)			-.009 (.142)	-.114 (.146)
Number arts			.170 (.108)	.067 (.102)			.004 (.083)	-.057 (.085)
Number banks			-.200 (.176)	-.200 (.162)			.149* (.107)	.146* (.104)
Number HQs	.301*** (.090)	.155* (.082)	.132 (.133)	.133 (.115)	.197*** (.072)	.128 (.079)	.087 (.121)	.096 (.116)
% Manufacturing	.525 (.434)	.706* (.380)	.494 (.496)	.612 (.470)	1.066** (.418)	1.164*** (.411)	1.39*** (.487)	1.336*** (.472)
% Service	-2.837*** (1.075)	-2.177** (.949)	-2.517** (1.038)	-2.11** (.944)	.549 (.642)	.440 (.639)	.580 (.665)	.239 (.675)
% Old	.976 (.608)	.320 (.546)	.622 (.600)	.283 (.565)	1.683*** (.593)	1.125* (.656)	1.317** (.671)	.845 (.686)
Local constraint	.001 (.007)	-.002 (.007)	-.001 (.007)	-.004 (.008)	.001 (.002)	.001 (.002)	.002 (.002)	.001 (.002)
Within 100 miles	-.250** (.121)	-.225** (.100)	-.107 (.113)	-.129 (.099)	-.186* (.106)	-0.139 (.108)	-.198* (.119)	-.187 (.118)
Elite schooling	-.547 (.674)	-.812 (.647)	-.646 (.624)	-.973 (.659)	-1.569*** (.608)	-1.746*** (.620)	-1.575** (.626)	-1.675*** (.627)
<i>Organization</i>								
Industry localness	.971** (.458)	.920** (.460)	.955** (.458)	.909** (.460)	1.863*** (.461)	1.878*** (.461)	1.859*** (.462)	1.867*** (.463)
Number on board	.064*** (.008)	.064*** (.008)	.063*** (.008)	.063*** (.008)	.057*** (.013)	.056*** (.013)	.057*** (.013)	.055*** (.013)
Sales	.107*** (.023)	.100*** (.023)	.105*** (.023)	.099*** (.023)	.091*** (.020)	.091*** (.020)	.091*** (.020)	.091*** (.020)
ROA	.170* (.087)	.162* (.086)	.169** (.086)	.166* (.085)	-.040 (.081)	-.040 (.081)	-.040 (.083)	-.039 (.083)
Manufacturing firm	.001 (.092)	.000 (.092)	.007 (.092)	.006 (.092)	.076 (.097)	.069 (.097)	.069 (.097)	.061 (.098)
Service firm	-.088 (.135)	-.075 (.135)	-.075 (.135)	-.062 (.135)	.027 (.107)	.022 (.107)	.025 (.107)	.015 (.107)
Bank firm	.439*** (.118)	.438*** (.118)	.456*** (.119)	.458*** (.119)	.119 (.147)	.123 (.147)	.098 (.148)	.095 (.148)
Constant	-1.948* (1.008)	-1.538* (.900)	-1.142 (1.026)	-1.249 (.908)	-3.934*** (.516)	-3.738*** (.518)	-3.705*** (.564)	-3.674*** (.550)
Observations	1898	1898	1898	1898	2964	2964	2964	2964
Number of groups	51	51	51	51	51	51	51	51
Wald $\chi^2$	418.17	454.29	454.04	485.22	170.35	175.32	173.44	180.27
$\chi^2$ change		36.12***	35.87***	67.05***		4.970**	3.09	9.92***
Comparison model		9	9	9		13	13	13

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ ; two-tailed for controls, one-tailed for hypothesized effects.

\* The dependent variable is a count of local received connections for each organization. Standard errors are in parentheses.

even controlling for institutional factors and other economic and social controls, organizations in an early-established community continue to maintain locally focused ties, which points to the existence of a geographically based template of action in community networks.

For the organizational-level analyses in 2000, model 13 presents the baseline model, and model 14 presents the baseline plus the early-establishment variable. Again, this variable has a statistically significant effect and significantly adds to the overall model fit, indicating support for H3a. In model 15, which includes the institutional predictions in H2a–2c for

2000, none of the variables achieved even marginal significance. Model 16 presents the full model for 2000, with both the institutional and template predictions. In this model, the early-establishment variable is significant, giving H3a full support, indicating that in both 1986 and 2000, even controlling for institutional factors and other economic and social controls, organizations in an early-established community continue to maintain locally focused ties. For the institutional predictions in H2a–2c, however, findings were not consistent across both years of the analysis.

Table 7 presents the results of the organizational-level analyses of newly founded firms between 1987 and 2000. This

Table 7

**Random Effects Negative Binomial Regression Results for Organization-level Analyses of Firms Founded, 1987–2000\***

Variable	Model 17
<i>Community</i>	
Prominent firm % local	1.028** (.472)
Upper-class club	-.219 (.200)
Number arts	-.051 (.103)
Number banks	.005 (.129)
Number HQs	.112 (.136)
% Manufacturing	.456 (.598)
% Service	.744 (.778)
% Old	.475 (.871)
Local constraint	.001 (.002)
Within 100 miles	-.074 (.144)
Elite schooling	-1.264* (.762)
<i>Organization</i>	
Industry localness	1.072 (.657)
Number on board	.051*** (.019)
Sales	.062** (.031)
ROA	.134 (.244)
Manufacturing firm	.021 (.142)
Service firm	-.135 (.144)
Bank firm	-.357 (.251)
Constant	-2.486*** (.742)
Observations	1823
Number of groups	51

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ ; two-tailed for controls, one-tailed for hypothesized effects.

\* The dependent variable is a count of local received connections for each organization. Standard errors are in parentheses.

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table differs from the full models in table 6 in that in place of the early-establishment variable, the key variable of interest in this model is the degree of local connections made by prominent firms within each community. This tests H3b, which predicted that in addition to there being different local norms of connection, newly founded firms looking to more prominent local firms leads to the perpetuation of the pattern. In this table, prominent firms' percent local connections is a statistically significant predictor, giving support to H3b and indicating that newly founded firms look to prominent local firms when establishing their boards of directors.

Some of the results of the control variables also merit attention. At the community level, the percentage of service firms within a community was negatively significant in all of the 1986 models but not in 2000. This variable also was significant in all of the 1986 organizational-level analysis but, again, not in 2000. In the organizational-level analyses, perhaps not surprisingly, industry localness, the percentage of local connections of the focal companies' industry, was a consistently significant predictor. That there is isomorphism in local connections for organizations in the same industry indicates that while local firms are an important model, industry peers are significant as well. This is an important finding because it provides further evidence that firms do emulate other firms' board of directors templates. At the organizational level, the number on the board and total sales also contributed to the number of local connections in both years, and ROA contributed in 1986 but not in 2000. Consistent with the changes in banking industry directorship relationships described by Davis and Mizruchi (1999), being a bank firm contributed to local ties received in 1986 but not in 2000.

## DISCUSSION AND CONCLUSIONS

This study examined how the social technology available during the establishment of intercorporate community networks continues to influence contemporary network structure and behavior. The hypothesis on the existence of an imprint was supported in both 1986 and 2000. Predictions that key connecting institutions would be influential in maintaining that imprint, however, received only partial support. Predictions about different locations having different legitimate templates of action that lead new firms to emulate prominent local firms received strong support, indicating that after the initial imprint, local norms about what is the most appropriate board design leads to the maintenance of this pattern. These results indicate that the social path that community networks take is affected by the historical legacy of the social technology available at the time of network founding. This work contributes to two areas, extending and further theorizing Stinchcombe's (1965) imprinting theory and creating a more nuanced view of directorship relations. I consider each of these more fully below.

The imprinting finding is not just the legacy of having the same corporations, or types of corporations, in these communities. Three-quarters of the network members entered the 2000 network after 1973, so the difficulty of transportation could not have significantly influenced why they would

continue to connect with local companies. Furthermore, an analysis of the top 500 companies in 1917 indicates that the vast majority of these companies no longer existed in 1967 (Navin, 1970). Additionally, 80 of the largest 200 U.S. manufacturing companies in 1955 had disappeared by 1994 (Mizruchi, Stearns, and Marquis, 2004), and approximately one-third of the Fortune 500 in 1980 was no longer in the list in 1990 (Davis and Stout, 1992). Thus, while large U.S. companies may appear to have an air of permanence, contrary to what one might expect, significant turnover of corporations has occurred since the establishment of these networks.

Post hoc analyses further confirmed that these findings are not an effect of organizational age. Because of the data limitations on determining each organization's age, as discussed in the methods section, I was not able to run the full models with organizational age as a control variable. Table 8, however, has the 2000 regression analyses using the subsample of firms for which age data are available.<sup>4</sup> This consists of the approximately 2,200 firms in these communities that have been established since 1973, the date when electronic data became available for both the NYSE and NASDAQ. In this analysis, the age coefficient is not significant, and the early-establishment variable is significant at the  $p = .023$  level.

An additional important factor that strengthens the imprinting findings is that these results stand up even in spite of the tremendous changes in U.S. industry that have occurred over the past 30 years. Historical evidence based on the largest U.S. corporations indicates that there has been a dramatic shift in the U.S. economy since the mid-1970s, represented by movement away from manufacturing to more service-oriented businesses, such as retail, health care, telecommunications, financial services, and information technology (Nohria, Dyer, and Dalzell, 2002). To confirm that the finding of localness is not just an effect of the recent period but has existed since the imprint, it is important to test for these same effects on a sample of communities prior to the mid-1970s. Director network data are difficult to collect, so for convenience reasons, as a post hoc test, I conducted an analysis on the 1964 director sample collected by the MACNET group at SUNY Stony Brook (see Atwood et al., 1985, for a description of the sample and data collection procedures). This dataset only contains information on the approximately 1,100 largest firms of the period, so as my sample, I examined the 18 communities that had over 10 headquarters. Headquarters information for the firms was gathered from the 1965 *Moody's Industrial Manual*. At the community level, I again used the percentage of local connections as my dependent variable. As my independent variables, I used *early establishment*, existence of an *upper-class club*, *percent manufacturing* (*Fortune* categories industrial and merchandizing), *percent financial* (*Fortune* category banks and life insurance), *number of headquarters* and *within 100 miles*.

As shown in table 9, early establishment continues to influence local connections, and, confirming Kono et al.'s (1998) findings, having an upper-class club also influences local directorship connections. Furthermore, the variables percentage financial and percentage manufacturing were significantly

**4**

Note that this is not the official age for the firm but reflects the date when the firm had its initial public offering (IPO) and became a public company. Although only having the IPO age may be seen as a potential limitation, it is at the IPO that firms typically begin inviting outsiders onto their boards. Because of the pressures of public listing, and scrutiny on firms by investors, it is likely that this is the point at which a firm would be most cognizant of the legitimacy issues that I have argued are important in understanding why the network imprint is maintained.



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Table 8

### Random Effects Negative Binomial Regression Results Organization-level Analyses, 2000 including Age\*

Variable	Model 18
<i>Community variables</i>	
Early establishment	.075** (.037)
Upper-class club	-.150 (.162)
Number arts	-.112 (.092)
Number banks	.036 (.115)
Number HQs	.248** (.124)
% Manufacturing	.332 (.541)
% Service	.411 (.746)
Local constraint	.346 (.830)
% Old	.000 (.002)
Within 100 miles	-.118 (.133)
Elite schooling	-1.912** (.754)
<i>Organizational variables</i>	
Industry localness	1.228** (.601)
Number on board	.053*** (.016)
Sales	.080*** (.028)
ROA	.018 (.228)
Manufacturing firm	.086 (.128)
Service firm	-.137 (.134)
Bank firm	.122 (.189)
Organizational age	.000 (.008)
Constant	-3.174*** (.673)
Observations	2181
Number of groups	51

•  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ ; two-tailed for controls, one-tailed for hypothesized effects.

\* The dependent variable is a count of local received connections for each organization. Standard errors are in parentheses.

positive. Thus, I can conclude that the effect of early-established cities being more locally connected is not a function of the recent period and that this pattern is quite persistent.

### Contributions to Imprinting Theory

This paper contains two important contributions to imprinting theory. First, my findings indicate that historically imprinted patterns have an influence on social forms beyond organizations. Second, unlike other imprinting work, I analyzed both the imprinted system and the components of the system that are responsible for maintaining the structure. The extension of imprinting theory to other social forms such as net-

Table 9

**Tobit Regression Results for Community-level Analyses, 1964\***

Variable	Model 19	Model 20	Model 21	Model 22
Early establishment		.103** (.046)		.094*** (.034)
Upper-class club			.403*** (.112)	.390*** (.099)
% Manufacturing	.591* (.326)	.262 (.328)	.773*** (.256)	.463* (.251)
% Financial	2.396*** (.708)	1.751** (.708)	1.77** (.604)	1.29** (.541)
Number HQs	.106** (.052)	-.003 (.064)	.011 (.047)	-.073 (.050)
Within 100 miles	-.133** (.078)	-.136* (.069)	-.032 (.064)	-.043 (.054)
Constant	-.696** (.330)	-.670*** (.303)	-.802*** (.271)	-.807*** (.230)
LR $\chi^2$	14.27	18.99**	24.59***	31.29***
$\chi^2$ change		4.72	10.32	16.02
Comparison model		18	18	18
Observations	18	18	18	18

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$ ; two-tailed for controls, one-tailed for hypothesized effects.

\* The dependent variable is the percentage of local connections. Standard errors are in parentheses.

works is an important addition to the imprinting literature and, more generally, to all theory that considers historical influences. Other theorists have indicated that there is path dependence after a technology or practice locks in (e.g., Arthur, 1994) or that history has a pattern of cycles or waves (e.g., Abrahamson, 1997; Schlesinger, 1999). The unique aspect of Stinchcombe's theory, however, is that founding conditions continue to have an effect on future social structures. So extending this theory beyond its current domain in organizations indicates that many other features of society may have some yet uncovered "DNA" that can help explain their operation and behavior. Furthermore, these findings add to the role of history in network theory. While recent investigators have described the persistence of network structures (Walker, Kogut, and Shan, 1997; Uzzi and Spiro, 2004), no one has examined either why this persistence occurs or how network structures reflect the social conditions at founding. This paper, then, both contributes to a growing work on network persistence and pushes investigators in new directions to understand how structures reflect founding environments.

While these findings have implications for the role of founding conditions in understanding society, the main contribution to imprinting theory per se is the attempt to elucidate and test some of the social mechanisms that result in the perpetuation of patterns. I postulated two mechanisms, social institutions and locally legitimate templates of action. I found very limited support for predictions for the three social institutions but strong support for the mechanism of locally legitimate templates of action. I hypothesized that each locality had different norms about the degree of localness and that even controlling for many other organizational and community factors, being in a locale that was established early would lead organizations to establish more local connections. In considering how this norm is perpetuated over time, I hypothesized that newly founded members to the network systems would look to the pattern of prominent local firms. Both of these

## Network Imprinting

hypotheses were supported, which indicates that an important way that historically based patterns are maintained is by existing norms and emulation of these norms by new entrants to social systems. These findings complement one another, but neither is sufficient to make a strong case for local emulation, since for the overall network pattern to be maintained, new firms have to respond to the pattern and existing firms must continue selecting local members when filling board vacancies. Previous studies have found that there is a low rate of reconstitution of directorship ties with the same firm (Palmer, 1983), so existing firms continuing to have locally staffed boards indicates that firms in early-established communities likely have a different way of conceptualizing the available pool of directors than firms in other communities.

A potential criticism of the analyses that examine the role of prominent firms in maintaining the pattern is that, unlike the other analyses, they were not carried out over multiple time periods, so the findings may represent a cohort or period effect. There are a number of reasons why this may not be true. First, theoretically, given that the effect of prominent firms on the behavior of others is a well-established tenet of new institutional theory (DiMaggio and Powell, 1983), any cohort or period effect would have to be at least partially reflected in the cohort of prominent firms in 1986, since the new entrants are looking to these local others when establishing their boards. Second, since the 1964 analysis is of only the approximately 1,100 largest U.S. companies, it can also be considered to reflect prominent firms, so the findings corroborate the 1986 pattern. It is also unlikely that there is something historically specific to the cohort of new entrants to the system between 1987 and 2000. While it is true that this is just one period, these firms were founded in the most recent historical period, when travel and communication are quite commonplace, and there is therefore no technological reason why they would continue to maintain local ties.

My analyses indicate that in the context of community networks, the period of founding influenced local norms and culture, which were perpetuated by new entrants following the example of prominent firms. While these arguments were derived from the network literature, at a more abstract level, they can be extended to overall imprinting theory. For example, Baron, Hannan, and Burton (1999: 531) measured founders' mental models and found a relationship between the degree of a founder's bureaucratic model and firms' levels of managers and administrators, which they described as follows: "the founder's blueprint likely 'locks in' the adoption of particular structures; it also 'locks in' certain premises that guide decision making." A potentially interesting extension of that work that takes more of a social mechanisms approach and maps onto the institutions and templates I theorized would be to study how and which "particular structures" and "certain premises" actually lead to the maintenance of these organizational patterns. Or, put another way, what institutions and legitimate templates of action are responsible for the "lock in?" For example, did some founders create a greater number of separate offices or departments, more layers in

the reporting structures, have a greater investment in physical facilities, establish different spans of control? And which of these, if any, influenced the persistence of the observed pattern? Furthermore, what templates of legitimate action were established through speeches, company vision or mission statements, or even hiring practices? And again, which of these, if any, influenced the persistence of the observed pattern? While this is just an example, it illustrates that the next stage in work on organizational imprinting may be to uncover the social mechanisms that led to the maintenance of historically imprinted patterns and, as in this study, two important mechanisms may be institutional structures and legitimate templates of action.

### **Contributions to Work on Director Networks**

This paper also contributes to the literature on board of director networks, a context that has been shown to be influential in a myriad of corporate behaviors, including intercorporate control (Mintz and Schwartz, 1985) and how practices are spread among the corporate elite (Davis, 1991; Haunschild, 1993; see Mizruchi, 1996, for a review). First, my findings contribute to understanding the role of banks in these networks. There is substantial evidence of the important role of banks as local connectors in the 1960s (Mintz and Schwartz, 1985). While Davis and Mizruchi (1999) showed that the national influence of money center banks waned between 1982 and 1994, they pointed out that banks still appear to be important to more localized networks. My results generally corroborate Davis and Mizruchi's (1999) findings that there has been a change in the role of banks since the 1980s. At the organizational level, being a banking firm positively influenced local received connections in 1986, but by 2000, there was no relationship. Contrary to what they and others suggest about the local nature of bank ties, however, the presence of banks in a community was not statistically significant in the majority of the models, and only marginally significant in the 2000 organizational-level analyses. Thus, even though banks as individual firms may have a more local pattern of connections, it is not clear that this would be enough to change the overall local network structure. Future researchers may want to examine the differing importance of both money center and regional banks to local and national networks more systematically.

Second, the results of this study contribute to the debate in the directorship network literature about the extent to which interlock ties reflect individual intraclass connections or firm-level interorganizational relationships. Recent scholarship has indicated that social class membership and upper-class background more generally has an influence on corporate behaviors such as diversifying acquisitions (Palmer and Barber, 2001). Work by Palmer and colleagues (e.g., Friedland and Palmer, 1984; Palmer, Friedland, and Singh, 1986; Kono et al., 1998) on interlocks indicates that there is intraclass cohesion, as does Mizruchi's (1989) finding that there are localized patterns of corporate political donations. In my study, at the community level, the existence of upper-class clubs was a significant predictor in the 1986 organizational-level analysis and 2000 community analysis, as well as the post hoc 1964

community-level analysis. These different results in the two levels of analysis may relate to the difference between having all tie types in the community-level of analysis and only received ties in the organizational-level analysis. As Davis, Yoo, and Baker (2003) said, neutral ties may be most important to network cohesion. Given that neutral directors are frequently not associated with a specific organization, and thus are not recruited to mitigate constraint or establish an intercorporate relationship, it is possible that these ties reflect upper-class connections instead. Thus, even if the class-based system of establishing local connections has faded over time, analyses that include neutral connections may have a lingering class effect (e.g., the effect still being present in the 2000 community network analyses). When looking just at received connections, as in my organization-level analyses, this upper-class effect may be important only in the earlier period, 1986. Again, the results in this paper are not enough to rule out either account, and future researchers may want to examine the continuing role of social elites in communities during this period more systematically.

Finally, the largest potential contribution of this work to the directorship literature may be what it adds to understanding the different contingencies under which directorship connections matter as sources of information. Others have described a geographically contingent effect of interlocks, but in relation to their use as a means of intercorporate control. As Palmer, Friedland, and Singh (1986: 794) stated, "Directors who maintain intraclass bonds with one another by virtue of their common residence in elite neighborhoods and memberships in social clubs and policy making groups need not sit on one another's boards in order to facilitate coordination between the firms they command." While this quotation is about intercorporate control, viewed from the perspective of Haunschild and Beckman's (1998) work, geographic co-location may be an important means of information substitution that could temper the role of these networks in the spread of practices. For example, Haunschild and Beckman (1998) found that CEOs' membership in major business associations reduced the influence of interlocks. But, as the Palmer, Friedland, and Singh, (1986) quote above indicated and Davis and Greve's (1997) finding with respect to golden parachutes suggested, geographic co-location may play an important role in how information is spread. In particular, given that all corporations are situated within geographic locales, if information substitution operates through this channel, Kono et al.'s (1998: 863) contention that "previous interlock research which ignores spatial considerations is seriously misspecified" may need to be investigated more fully. My findings, which suggest that the effect of geographic influence on the interlock network may vary depending on the historical circumstances of individual communities, is one step in that direction. Future investigators may want to tie this geographically based heterogeneity to the diffusion of information more explicitly. An additional potential area of future investigation may be how local and non-local relationships are related to structural holes (Burt, 1992). For instance, if one assumes that more local connections lead to

greater redundancies of information, having greater extra-local connections may be an advantage to a firm.

Beyond a contribution to theory, and to understanding the historical determinants of directorship relationships, this set of findings is important because the network connections of communities influence the overall community's well-being (Galaskiewicz, 1997; Putnam, 2000). These results provide insight into community life in America as well and explain some of the differences in community social capital (Putnam, 2000) that have not yet been explored. A long tradition of analysis has examined the role of elites in community life (Hunter, 1953; Mills, 1956; Baltzell, 1958; Domhoff, 1998), and much of this analysis has found elite networks to be exclusionary. Recent research (Putnam, 2000), however, has suggested that greater social cohesion among community members will lead to a more prosperous community. Extending Putnam's (2000) argument to local intercorporate networks, understanding the determinants of elite networks will lead to a better general understanding of communities and of the connection between corporations and community social capital. Future researchers may want to examine how historical differences in communities and local networks have an impact on other aspects of social and community life.

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