

COMMUNITY ECOLOGY AND THE SOCIOLOGY OF ORGANIZATIONS

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■ **Abstract** Research on organizations is increasingly informed by analysis of community context. Community can be conceptualized as sets of relations between organizational forms or as places where organizations are located in resource space or in geography. In both modes, organizations operate interdependently with social institutions and with other units of social structure. Because such relationships channel flows of resources, opportunities are granted or withheld from social actors depending in part on their organization connections. Such considerations encourage analyses of organizations in ways that spread the relevance of results beyond organizationally defined research problem areas.

INTRODUCTION

Early case studies of organizations frequently emphasized the importance of community context in explaining how organizations work. For example, Selznick's (1949) *TVA and the Grass Roots* and Gouldner's (1954) *Patterns of Industrial Bureaucracy* treated the relationship as reciprocal. Organizations affect the communities they belong to and also are affected by those communities. Curiously, the rise of open systems theory, as Scott (1992) termed it, led to a more abstract concept of the environment in which this reciprocal relationship between community and organization was less prominent.

Recent research is revitalizing the study of organizations in community context. In this review, "recent" means research reports published since 1990. Two factors seem to be encouraging this surge in research activity. First, most researchers would agree that resources are unevenly distributed in both market and geographical space. Foundings and failures of organizational forms occur at higher rates in some communities and regions than in others. Second, because local communities provide constraints as well as access to resources and power, social structure channels resources and, therefore, opportunities.

Research into the reciprocal effects of community and organizations falls into groups defined on two dimensions. In one, community is a web of functional

TABLE 1 Analysis of organizational communities

	Spatial differentiation	
	No	Yes
Functional complementarity		
No	I: Organizational demography	III: Concentration and agglomeration
Yes	II: Interorganizational relations	IV: Residential communities

interdependencies among organizations or classes of organizations. We refer to this dimension as functional complementarity. The other dimension is the degree to which spatial differentiation figures in the analysis. In the extreme, the term community is used with reference to a residential community—a city or a region. So importance is attached to place and geographical distance, and such communities have a social identity as well. Whereas the first kind of organizational community is defined as a set of relationships between organizations, the second is defined as an aggregate of social units, some of which are organizations, colocated in geographical space.

We juxtapose these two dimensions in a simple twofold table (see Table 1). In this Table, spatial differentiation refers to whether or not the research considers either distance or location in a theoretically informed way. Functional complementarity means that the research considers exogenous factors describing variability in product or market structure. The important issue here is whether these properties are viewed as varying systematically. This scheme serves as our organizing mechanism for the review that follows.

ORGANIZATIONAL DEMOGRAPHY: SINGLE POPULATIONS IN THEIR HABITATS

Studies that examine collections of organizations that have something in common but give little attention to relations of interdependence among constituent members fall in Group I in Table 1. The best example of such an approach is research that employs demographic methods to examine single populations of organizations (Carroll & Hannan 2000). Literature in this group is distinguished from that falling in one of the other three groups (II, III, and IV) in that it treats organizational populations or, more broadly, collections of organizations as homogeneous.

In this work, an organizational population usually is defined as the set of organizations manifesting an organizational form. Definitions of organizational form vary, but they share a common feature: They set population boundaries indicating which organizations are in the population in question and which are not. One approach is to use a simple rule that all producers of a good or service fall into the population under study. If so, one implicitly assumes that there is some set of organizational correlates that accompanies such production specialization and that the

organizational arrangements falling within the production specialization category are not heterogeneous. So organizations do not blithely move from one kind of production to another. Doing so requires fundamental changes in organization.

An intriguing but challenging new approach is to define organizational forms through reference to social identities (Hannan et al. 2003a,b, 2004; Polos et al. 2002). These identities consist of externally defined social codes that specify the features that an organization can legitimately possess (Carroll & Hannan 2000, p. 68). This approach takes advantage of the very reasonable observation that social support has a strong impact on the vital rates through which organizational populations expand and contract. It also provides continuity over time and space as local organizational populations arise, expand or contract, and eventually become extinct.

The theoretical backbone of most of the work on single populations is the theory of density dependence selection, originally formulated by Hannan (1986) and first studied empirically by Hannan & Freeman (1987, 1988). Its core idea is that two processes are driven by population density: legitimation and competition. As legitimacy rises, founding rates accelerate and failure rates decelerate. The population grows. Ultimately, the population pushes against a resource constraint, a carrying capacity. Competition rises and the processes reverse. These predictions are based on the assumption that the carrying capacity is fixed. Recent elaborations show that if the carrying capacity is treated as endogenous, the modified theory of density dependence selection can also help explain why organizational populations oscillate over time (Lomi et al. 2005). Nonetheless, in the typical demographic treatment of single populations, members are uniformly exposed to the processes of legitimation and competition.

Research testing density dependence has long been concerned with the need to disentangle processes in historical time from processes in duration time. When data are left-truncated, and units enter the analysis whose histories began prior to the study's start, cohort effects (when the organization in question began) are confounded with events that happen during its lifetime. Such confounding leads to errors of inference when the process of aging is under study or when processes of interest have unknown age dependence. In particular, tests of the theory of density dependence selection can be obscured with such left-truncated data structures. This concern has led researchers to favor studies of single populations over their entire history.

In such studies, location in geographical space generally enters the analysis in two ways. First, characteristics of local habitats are often treated as factors to be controlled. This is accomplished by measurement of the localized factors, including such measures in multivariate models as controls. Second, the model of density dependence selection has been elaborated to consider the likely possibility that social processes driving legitimation and competition occur within spatial units having different boundaries. So legitimation may proceed through communication processes that are national, whereas competition is driven by resource competition that reflects local conditions (Carroll & Hannan 2000).

In recent years, however, we have witnessed an important shift away from analyses that treat organizational populations as homogeneous. Researchers have relaxed the assumption that organizations in a population have equal influence on each other and have started to examine the internal structure of organizational populations. Evidence produced by this body of work increasingly suggests that single populations are often best seen as organizational communities within which classes of organizations occupy distinct locations in geographical and social space. This work on the internal structure of single populations together with a small but growing number of studies on interpopulation relations has revived interest in some of the key theoretical insights associated with community ecology. It has also become apparent that this community turn has led to important extensions and refinements of the theory of density dependence.

INTERORGANIZATIONAL RELATIONS: COMMUNITIES AS WEBS OF FUNCTIONAL INTERDEPENDENCIES

We turn our attention now to studies in which multiple organizational populations are viewed as differentiated according to function. In such analyses, the unit character of communities is inferred from patterns of interdependency among organizational actors. Much of this work builds on insights from the field of human ecology. In American sociology, studies of human ecology emerged in the 1920s as part of the so-called Chicago School (for a review of the contribution of this school to American sociology, see Abbott 1997). Here, we briefly consider this human ecology tradition in the work of Amos Hawley, who is most often cited by contemporary researchers taking this functional complementarity approach. We consider human participants as critical resources that differentiate organizations and also serve as a basis for competition. A second basis for differentiation is technology. One may well speak of organizations employing the same general technology as a community, when, for example, one considers biotechnology. Studies show patterns of interdependence based on ideology or social identity in which the glue holding communities together is common, professed, cultural qualities. Finally, such functional complementarities are observable in the direct network ties among organizations that are sharing or trading resources.

Hawley (1986) argued that the central ecological question is the relationship between units of social organization and their environments. Communities can be identified and studied, he argued, with no spatial dimension. In making this argument, Hawley was trying to break the common identification of ecology with the study of spatial organization of human populations. Of course, this was more of an ambition than a reality. Hawley's own work was very much about residential communities organized in space. He focused attention on interdependence among these productive units and their tendencies to form larger, organized systems, arguing that competition received too much attention and that human social organization is at least as much driven by cooperation as by competition.

Cooperation is based on ways in which power of action is increased by organizing. In ecological analyses, this takes two forms: symbiosis provided by complementary differences, and commensalism in which groups are built on the basis of what their members have in common, which he termed "supplementary similarities" (Hawley 1986). According to Hawley, vertical differentiation arises when productive units that most directly draw resources into a community produce the conditions under which other productive units subsist. Essentially, those early in the flow of resources are in a position to coerce those later in the resource flow. (For a detailed discussion of Hawley's community ecology, see Aldrich & Ruef 2005.)

In the 1980s, a number of writers addressed the question of collective adaptation by groups of organizations. In this literature, location and distance are defined in resource space by groups of organizations. Astley (1985) wrote about community ecology as a way of studying such collective adaptation. He defined organizational communities as functionally integrated systems of interacting populations. Similarly, DiMaggio & Powell (1983) used the term "organizational field" to refer to organizational collectivities defined around a common functional or product/service domain. Contemporary work on organizational communities so defined tends to examine how relationally defined locations within organizational communities influence key organizational outcomes. Geographical space is all but ignored.

Positions in Participants' Sociodemography Space

An influential empirical paper in this line of work is McPherson's (1983) analysis of the flow of organizational members among voluntary associations in the city of Omaha, Nebraska. McPherson defined the relations that a voluntary association has with other voluntary associations on the basis of the sociodemographic characteristic of its members. Variables describing members that a voluntary association targets—young or old, more or less educated—locate the organization within the sociodemographic space of the community. Furthermore, the extent to which a voluntary association targets members who are also targeted by other voluntary associations defines the extent of niche overlap. McPherson argued that the competition between two voluntary organizations for members is directly proportional to the similarity of their membership on sociodemographic characteristics. In subsequent work, he and collaborators have also proposed and shown that the degree of an organization's niche overlap influences the likelihood that an organization will change its position in sociodemography space (McPherson & Ranger-Moore 1991, McPherson & Rotolo 1996, McPherson et al. 1992).

Baum & Singh (1994) adapted McPherson's approach to study the community of daycare centers in metropolitan Toronto between 1971 and 1989. Whereas McPherson located voluntary associations within community space on the basis of the sociodemographic characteristics of volunteers, Baum & Singh located daycare centers on the basis of the ages of the children they enroll. One of their

key findings is that daycare centers that occupied market regions that had large overlaps with other daycare centers were more likely to fail than those with less overlap.

Sorensen (2004) recently extended McPherson's approach, showing that flows of organizational members have important consequences beyond the context of voluntary associations. Using data on 84 industries in Denmark during the period 1980–1991, he found that new firms were less likely to appear in industries located in labor markets with large overlaps with other industries than were firms located in labor markets with less overlap. Together, this work suggests that organizations that occupy crowded locations in the sociodemographic space of the community experience greater competition.

Positions in Technological Space

Although work by McPherson, Baum & Singh, and Sorensen identifies organizational relations by focusing on the organizational members and clients targeted by organizations, other researchers defined locations within organizational communities by examining different dimensions of functional interdependence. Podolny & Stuart (1995), in a study of all U.S. semiconductor patents granted between 1976 and 1991, developed the concept of “technological niche” to represent the relationships between innovations in a common technology space. Underlying such a niche is a community of organizational actors consisting of manufacturing firms, universities, government research laboratories, and others that discover new technology and combine streams of information. Podolny et al. (1996) expanded the characteristics of niches in technological networks to include organizational population densities and the niche crowding that occurs at high densities. Crowding has negative effects, decreasing growth for organizations that inhabit these technological spaces, whereas high social status, which depends on the acts of public deference that an organization receives from other organizations, increases the growth rate of organizations that occupy uncrowded technological spaces. According to Podolny et al. (1996), crowding constrains growth because the ability of an organization to pursue technological opportunities is diminished by the presence of organizations that have similar technological competencies. Status, on the other hand, facilitates growth by sending signals of quality in sparsely populated regions of the technological space.

Studies focusing on what Hawley calls “symbiosis” (complementary differences) often emphasize the importance of size specialization within technological communities. Big organizations can and do squash their competitors, but they can also provide resources or legitimacy for them. Dobbin (1994) found that U.S. railroads between 1825 and 1900 displayed such mutualism, as short lines provided larger lines with reach into small communities. Conversely, the larger lines connected the smaller ones, allowing them to connect to more remote locales. Similar factors operate when technical innovations are localized, but network economies provide the basis for symbiosis. Barnett & Carroll (1987) found a similar

relationship between commercial and mutual telephone companies in southeast Iowa between 1900 and 1917. These two forms tended to serve different localities, urban versus rural, and had different scales of operations. Each improved the other's chances of providing long-distance services. Barnett (1995) found additional evidence of mutualistic relations between single exchange and multiple exchange phone companies in Pennsylvania between 1879 and 1934. These two classes of organizations increased each other's growth rates while decreasing failure rates.

Positions in Ideology Space

Ingram & Simons (2000) studied organizational communities by examining interdependence in the ideologies that organizations pursue. When organizations pursue different ideologies, they pursue their ideological goals by discouraging organizations that represent rival ideologies and encouraging organizations that share the same ideology. This implies that whereas similarity among organization members and their technological competencies engenders competition, similarity in ideologies has mutualistic effects on organizations. Examining Israeli worker cooperatives, Ingram & Simons (2000) found that as the density of two organizational populations sharing the same socialist ideology (kibbutz organizations and credit cooperatives) rose, the failure rate of workers' cooperatives declined. At the same time, increases in the number of banks assumed to espouse a capitalist ideology increased the failure rate of workers' cooperatives, but only for those closer to the socialist ideology. Extending Ingram & Simons's analysis, Barnett & Woywode (2004) examined the effects of ideological interdependence among left-wing, right-wing, and centrist Viennese newspapers between 1918 and 1938. They found some evidence that competition is stronger among organizations espousing adjacent ideologies than between organizations located at opposite points in the ideological continuum. Competition decreases as ideological differences rise, they argue, in part because diametric opponents may enhance each other's identity by their sharp contrast.

Positions in Identity Space

Ruef (2000) studied the organizational community of U.S. health care organizations by focusing on relations of interdependence among organizational identities. In his analysis, organizational forms emerge when community-level processes trigger timing events. Timing events arise in the context of U.S. health care organizations when regulations change, providing sociopolitical legitimacy to a form. Cultural organizations produce new forms when media attention generates the requisite distinctive identities. Identities are defined as "patterns of textual association with other publicly recognized symbols" (Ruef 2000, p. 679). Exemplifying this cultural conception of identities, Ruef noted that "potential identities are represented as regions of the discourse where discussion of procedures (e.g., 'kidney transplantation or dialysis'), actors (the 'Health Care Financing Administration'), values ('universal coverage'), and symbols may ultimately become formalized as

novel organizational arrangements” (Ruef 2000, p. 679). However, not all emerging distinctive identities are equally likely to result in new organizational forms.

In a manner similar to Ingram & Simons’s analysis of ideological interdependence, Ruef found that identity interdependence generates mutualistic effects for organizations that have similar identities. Identities not yet associated with an existing organizational form were more likely to result in the emergence of a new form if there were existing organizations with a similar identity. Similar identities, according to Ruef, generate legitimacy and resource spillovers. Existing organizational forms provide sociopolitical legitimation owing to prior collective action that leads to securing approval from key social actors (e.g., regulators). Existing organizational forms also provide access to resources, strategies, and templates that can be used by forms with related identities. However, Ruef found that this mutualistic effect of organizations with related identities decreases at very high levels of density. He argued that this occurs because competitive effects outweigh mutualistic effects. Resources available to the potential new form become scarcer, and claims about the distinctiveness of a new identity positioned in a saturated location of the identity space are less plausible. Under such circumstances, existing organizational forms are likely to incorporate aspects of the potential organizational form within their own identities. Ruef found weaker evidence for a competitive effect on form emergence of organizations with dissimilar identities.

Together this work suggests the importance of considering multiple dimensions when defining the functional boundaries of organizational communities. Mutualism and competition are linked not only to the flow of resources, such as labor or technological competencies, but also to similarities and dissimilarities in ideologies and identities. In this multidimensional space, the consequence of occupying a location that overlaps with other organizations varies depending on the dimension being considered. Similarities in resources have competitive effects on organizations, whereas similarities in cultural and ideological symbols appear to have mutualistic effects. So this work supports Hawley’s sociological insight that social units’ power of action can indeed be strengthened by supplementary similarities.

Community Structure in Market Space

The studies reviewed above illuminate how locations within the community structure influence organizational outcomes, but a distinct line of work associated with the theory of resource partitioning speaks to the question of how communities evolve as wholes. The central idea running through this literature is that competitive processes permit winners to choose the most advantageous parts of markets and other resource spaces, forcing competitive losers into less advantageous, specialized niches. Hawley (1950) followed this line of reasoning in his analysis of dominance and key function units in communities. Carroll and other contemporary theorists (for a review, see Carroll et al. 2002) developed a model of this process that yielded several specific predictions about such competitive processes. Specifically, this work examines the impact of a characteristic of a community’s

structure—its market concentration—on two classes of organizations: generalists (organizations occupying a broad space) and specialists (organizations occupying a narrow space). The key prediction is that market concentration caused by the movement of generalists toward the center of the resource space hurts generalists but benefits specialists. In other words, under relevant conditions, market concentration gives rise to differentiation. The primary mechanism that is invoked hinges on the existence of economies of scale that drive the movement of generalists toward the mass market and that free peripheral resources for specialists.

Carroll & Swaminathan's (1992) study of the American beer industry found evidence consistent with the theory, as concentration in the beer market benefited specialists such as microbreweries by increasing the founding rate and lowering the mortality rate. Similarly, Freeman & Lomi (1994) and Lomi (1995) found that rates of entry of specialist rural cooperative banks in Italy from 1964 to 1988 increased as size and market share of the generalist national banks rose. Moreover, Swaminathan (1995) reported that the founding rate of American farm wineries rose as a function of the overall concentration in the wine industry.

Recently, Carroll & Swaminathan (2000) have made an important extension, arguing that when markets are concentrated and dominated by large generalists, then specialist organizations can also be spawned by social movements embodying anti-mass production cultural sentiments. The implication of this extension is that not all specialist organizations are equally likely to benefit from market concentration. Specialists that deploy an identity perceived as expressing an anti-mass production sentiment should benefit more from market concentration than specialists that deploy an identity perceived as inauthentic. Supporting this argument, Carroll & Swaminathan (2000) observed that the founding rates of brewpubs and microbreweries rise with market concentration and brewpub density and microbrewery density, but that contract brewers (marketing firms that outsource their beer production) are unable to proliferate in the face of rising brewpub density.

Positions and Community Structure as Kinds of Interorganizational Ties

Also falling in this quadrant is research by network analysts that provides fine-grained analyses of interorganizational ties among different kinds of organizations. Uzzi (1999) and Uzzi & Lancaster (2004), for example, studied relationships between banks and other business organizations in Chicago. The extent to which private information is transferred through network ties is correlated with the strength of the ties. Complex transactions tend to involve more private information, and relations between bankers and their clients developed in ways that created longevity for the ties. Powell et al. (2005) examined the structure of the community of life science organizations between 1988 and 1999. They focused on contractual ties designed to exchange or pool resources and identified two distinct stages in the evolution of the community. The first stage was dominated by multinational organizations and first-generation biotechnology firms. These two organizational

forms collaborated to commercialize lead products of young biotechnology firms. Then, in the second stage, as research progress attracted venture capital financing, the community evolved, pushing multinationals to the periphery and biotechnology and venture capital firms to the center. Powell et al. also found that, despite the global scope of the life sciences community, organizations exhibited a strong preference for collaborating with geographically proximate partners. Studies that highlight the importance of geographical location in defining organizational communities are the subject of the next section.

CONCENTRATION AND AGGLOMERATION: GEOGRAPHICAL SPACE

The studies reviewed in this section identify community through location of organizations in close physical proximity to one another. Such closeness is generally viewed as facilitating social interaction and increasing competition for resources. Furthermore, institutional and cultural factors are often concentrated in regions and other locales. Knowledge of technology and organizational routines is similarly localized. When researchers study single organizational forms over geographical locales, they focus on how local conditions accelerate or decelerate vital rates of organizations. We review two lines of work that emphasize the importance of organizations' position in geographical space. The first suggests that relations of interdependence tend to be stronger among organizations colocated in geographical space. The second examines spatial interdependence among organizations situated in different locales.

Interdependence from Colocation in Geographical Space

Initial tests of the theory of density dependence examined temporal variations in the founding and failure rates at the national level (Hannan & Freeman 1989). Organizations belonging to the same population were assumed to be linked to each other through processes of competition and legitimation, and the strength of these links was thought to be independent of where they were located in geographical space. Subsequent studies, however, relaxed this assumption, treating a system such as a nation as comprising subsystems, such as regions, states, or cities. Examining the differential effects of density at these different levels, this work shows quite unequivocally that geographical location matters to an understanding of how density influences foundings and failures.

Carroll & Wade (1991), in a study of U.S. breweries from 1800 to 1988, found that regional density had stronger and more consistent effects on foundings than nonregional density, although this pattern was reversed for failures. Swaminathan & Wiedenmayer (1991) studied Bavarian breweries from 1900 to 1989 and found that state density increased failure rates more than national density. Lomi's (1995) study of the founding rate of rural cooperative banks in 13 Italian regions from 1964

to 1988 showed that national density did not affect foundings, whereas regional density had strong nonmonotonic effects, as predicted by the theory. A study of U.S. automobile manufacturers by Bigelow et al. (1997) focused on five regions from 1885 to 1981. Regional density had stronger positive effects on foundings than national density. Sorenson & Audia's (2000) study of U.S. footwear producers between 1940 and 1989 showed that failure rates were affected by local density, measured by weighting national density by the geographic distance between the focal organization and all other organizations. According to their results, unweighted national density does not influence failure rates. Sorenson & Audia also found that state density had positive effects on founding rates, whereas national density did not. Cattani et al. (2003) studied founding rates of Dutch accounting firms across 11 provinces from 1880 to 1996. National density had weak effects but opposite to those predicted by the theory. Density at the level of the province, instead, had strong effects consistent with the theory of density dependence. Stuart & Sorenson (2003a) examined foundings of biotechnology firms across 308 standard metropolitan statistical areas (SMSAs) between 1985 and 1996. Using the weighted density measure adopted by Sorenson & Audia, they found that the local density of biotechnology firms increases the founding rate. They also found that IPOs and acquisitions accelerate the founding rate beyond the effect of local density.

Together this work shows that key organizational outcomes such as foundings and failures are more sensitive to surges and declines in subsystem density than surges and declines in system density. This evidence, therefore, suggests that single populations are often best seen as organizational communities with an internal structure shaped at least in part by geographical location. The local nature of the effects that density has on foundings and failures appears to stem from constraints that geography places on the availability of resources.

Research on foundings emphasizes how geography constrains access to information about entrepreneurial opportunities on which entrepreneurs build their decision to found new organizations. Carroll & Wade (1991) noted that entrepreneurs may base their decision to create a new organization on the local competitive situation, even though their success may ultimately be affected by the larger competitive environment. Similarly, Lomi (1995) attributed entrepreneurs' sensitivity to local variations to the limits in their capacity to collect information on nonlocal conditions, a form of local search (Pred 1977). Sorenson & Audia (2000) proposed that entrepreneurial activity is affected by local density because existing organizations provide individuals with opportunities to acquire knowledge of the business, form critical networks, and build confidence in their ability to open a new venture. They also argued that entrepreneurs tend to start new businesses in the area where they live because they become embedded in the local social structure.

Research showing the positive effects of local density on failure rates also views geography as constraining access to resources. The emphasis, however, tends to be on resources such as skilled labor and capital that become scarcer as the number of organizations present in a locale increases (Baum & Mezias 1992,

Ingram & Inman 1996, Sorenson & Audia 2000, Swaminathan & Wiedenmayer 1991). Areas with greater local density are thought to experience higher failure rates because members of the same organizational population compete against each other to acquire the same kinds of depletable resources. On the basis of the diverging effects of local density on foundings and failures, Sorenson & Audia (2000) proposed an ecological explanation of the persistence of the geographic concentration of industries. Theorists of agglomerations have long held the view that industries remain concentrated in space because firms benefit from locating near similar organizations. This argument dates back to Marshall (1920) and his introduction of the concept of external economies. The ecological explanation advanced by Sorenson & Audia questions the accuracy of that view, proposing that not lower failure rates but rather higher founding rates sustain the unequal distribution of industries in geographical space.

Research about geographically dispersed organizations generates an interesting exception to the idea that relations of interdependence tend to be stronger among organizations colocated in geographical space. This work implies that multilocal organizations may be affected more by other multilocal organizations that occupy similar positions in geographical space than by organizations located in proximity to their components. Haveman & Nonnemaker (2000), in a study of California savings and loan associations between 1977 and 1991, found that multimarket organizations (as opposed to single-market organizations) were more likely to enter local markets where they experienced a moderate level of contact with other multimarket organizations. They interpreted this finding as evidence that organizations similarly positioned in geographical space tend to limit the negative consequences of competition. Audia et al. (2001), in a follow-up study of the U.S. footwear industry, found that the number of geographic markets in which multiunit organizations met other multiunit organizations lowered the failure rate. They interpreted this finding to be a consequence of cooperative behavior among organizations similarly positioned in geographical space. The empirical evidence from these studies of geographically dispersed organizations seems to echo Hawley's argument that actors tied by supplemental similarities, in this case similar locations in geographical space, instead of competing for the same resources often collude. However, these studies of geographically dispersed organizations suggest that research on the impact of local density may need to give greater consideration to variations in organizational form within the same organizational population. It is possible, for example, that some organizational forms are strongly affected by the local context, whereas others are largely insulated from it.

Interdependence Across Geographical Boundaries

Whether revolving around localized information flows or consumption of locally available resources, the processes that give rise to mutualism or competition among organizations colocated in space are probably not neatly contained in geographically bounded areas. The intuition that these processes probably traverse ecological

boundaries has led researchers to investigate how organizations occupying adjacent locations in geographical space affect each other. An influential study in this line of work is Hedström's (1994) analysis of the spatial diffusion of Swedish trade unions in 371 districts during the period 1890 to 1940. He found that union activities in adjacent districts increased the probability of the first union being formed in a district. Hedström argued that union foundings disperse in space through localized social networks that span geographically adjacent communities, channeling vital information to potential union founders.

Two studies of cross-border interactions among neighborhoods within large cities provide evidence consistent with Hedström's findings. Greve (2002), like Hedström (1994), examined the spatial distribution of foundings in the early stage of an organizational population. He examined foundings of Tokyo banks from 1894 and 1936. His observation period started 21 years after the establishment of the first national bank. This study shows that foundings of banks at the level of the ward were increased by the density of banks in adjacent wards. Baum & Mezias (1992) studied the Manhattan hotel industry between 1898 and 1990. They reported that "while being located closer to other hotels in Manhattan increased a hotel's survival chances, this benefit of proximity was traded off against localized competition among neighboring hotels within more closely bounded geographic locales" (Baum & Mezias 1992, p. 597). In other words, the equivalent of local density at the neighborhood level had competitive effects, whereas the equivalent of adjacent density at the neighborhood level had mutualistic effects.

Two additional studies examined cross-border interaction among organizations located in adjacent areas, but they show competitive effects. Ingram & Inman (1996) studied hotels on the New York and Ontario sides of Niagara Falls. On each side, the density of hotels had effects that conformed to density dependence selection. That is, at low levels of density, density reduced the failure rate and increased the founding rate, whereas at high levels of density these relationships reversed. Cross-border analyses, however, evidenced only competitive effects. Density on one side of the falls increased death rates and decreased founding rates on the other side. Furthermore, against their prediction, they found that park development on either side of the falls benefited hotels on both sides of the border. Consistent with Ingram & Inman's observation of cross-border competition, Sorenson & Audia (2000) found that state density increased the founding rate of footwear producers, whereas adjacent state density decreased it.

Thus, the evidence regarding cross-border interactions is mixed. Some studies show mutualistic effects, and others show competitive effects. A possible explanation of these divergent findings is that the age of the organizational population under study affects the nature of these cross-border interactions. Hedström (1994) and Greve (2002) may have found mutualistic effects because they studied organizational populations in their early stage. For residents of areas that do not yet have members of the new population, existing organizations located in adjacent areas may be the only available source of first-hand information about the legitimacy of the new organizational form. Access to such information through

localized networks spanning geographical boundaries may indeed be a critical facilitating factor for the founding of new organizations. On the other hand, Ingram & Inman (1996) and Sorenson & Audia (2000) may have found competitive effects of cross-border interactions because they studied organizational populations that were already well established. Information about organizational forms that define membership in such populations tends to be more easily available for at least two reasons. First, members of well-established populations are likely to be present in a greater number of locations. Second, over time information about the viability of organizational forms of well-established populations travels across geographic boundaries through vehicles of cultural diffusion such as print media and exhibitions (Hannan et al. 1995). Obviously, a task for future research is to develop theory that predicts the conditions under which cross-border interactions among subpopulations give rise to mutualistic or competitive effects.

A distinct approach to the study of spatial interdependence lies in giving explicit consideration to the institutional context within which organizations operate. An interesting example is Wade et al.'s (1998) study of the impact of state-level prohibitions on the founding and failure rates of breweries in prohibition-free states. They observed both mutualistic and competitive effects of nonlocal prohibitions. In their study, low levels of nonlocal prohibitions, on the one hand, increased the founding rate of breweries presumably because they encouraged entrepreneurs to found breweries that satisfied the new demand. A high level of nonlocal prohibitions, on the other hand, suppressed foundings and increased failures because they probably signaled to owners and potential founders that their state might follow the example of its neighbors.

The work reviewed in this section strongly suggests that geographical proximity structures relations among organizations in important ways, giving rise to distinct groups of organizations that may interact in both mutualistic and competitive ways. Thus, research in which density and organizational outcomes are aggregated without considering geographic space clearly runs the risk of masking important organizational dynamics and, in the worst scenario, of generating spurious findings.

RESIDENTIAL COMMUNITIES: GEOGRAPHICALLY BOUNDED SOCIAL SYSTEMS

Research in Group IV of Table 1 continues to emphasize the importance of colocation in geographical space but also considers interactions among distinct organizational populations and other social units colocated in geographical space. There are three distinct lines of work in this area. The first examines patterns of interaction among multiple organizational populations over sets of locales. These patterns are usually detected by investigating variations in organizations' vital rates. The second studies how organizations influence and are influenced by the social organization of communities. Absentee ownership, for example, has strong effects on how the organizations in a community operate. Similarly, relations between

organizations (such as board interlocks) have effects on their human resource practices and business strategies. The third investigates the impact of the composition of organizational populations present in different locales on community outcomes. Together these literatures color the nature of social and economic life in geographically bounded communities.

Interorganizational Relations Within Residential Communities

Whether particular kinds of organizations are likely to emerge, flourish, or decline in particular locales depends in part on the presence of other organizations to which they are tied by relations of functional interdependence. Some studies infer exchange relations from qualitative data and show that symbiotic relations of mutual dependence benefit organizations. Palmer et al. (1990), in a study of U.S. cities in which at least one of the largest 1000 U.S. corporations was headquartered, found that the number of headquarters in a city had a positive effect on advanced service activities such as management consulting. Headquarters' characteristics such as mode of control and age, however, moderated this relationship. Zucker et al. (1998) examined foundings of biotechnology firms between 1976 and 1989 across 183 U.S. regions, each including one or more cities. Top quality universities increased the founding rate of biotechnology firms, and the number of star scientists in the region also had a positive effect. Stuart & Sorenson (2003b) in a study of U.S. zip code areas between 1978 and 1996 also found that proximity to universities with departments in biotechnology-relevant disciplines increased the founding rate of biotechnology firms in zip code areas that already had at least one biotechnology firm.

Other studies show that relations of interdependence stemming from whether organizations performing the same function have similar or dissimilar identities influence where new organizational forms are likely to emerge and where existing organizational forms are likely to become extinct. McKendrick et al. (2003) studied disk array producers from their initial appearance in 1986 to 1998. They found that the emergence of this organizational form was accelerated by the extent to which disk array producers agglomerated in places with related social identities (i.e., Boston, Silicon Valley). In their analysis, these identities represent a set of social relationships among organizations and individuals that generate and share information on the organizational form in question. McKendrick et al. also found that the prevalence of *de novo* firms as opposed to *de alio* firms in these agglomerations further accelerated form emergence. The reason, they argued, is that *de novo* firms possess identities that are more easily recognized than *de alio* firms.

Ruef (2004) studied the demise of the plantation organizational form after the American Civil War and found that the presence of organizational forms with dissimilar identities such as small family-owned or sharecropped farms accelerated the decline of plantations. This occurred presumably because this alternative organizational form increased the pressure for the reorganization of the plantation

in smaller tenant plots. However, the presence of mid-sized farms that had an organization of labor similar to the plantation form slowed the extinction of plantations.

The studies by Ruef and McKendrick et al. have at least two implications that go beyond a mere understanding of spatial heterogeneity issues. First, these studies substantiate the idea that processes of legitimation and delegitimation of organizational forms have a local character. Perceptions of whether an organizational form is a socially accepted form of collective action accumulate in part through everyday interactions. These studies suggest that the kinds of organizations with which people come into contact in their daily lives influence these perceptions in important ways. Second, these studies suggest that the spatial distributions of organizations tied by relations of interdependence to the organizational form under study are likely to influence the speed of form emergence and form decline. This observation is explicit in McKendrick et al.'s study of disk array producers, but it also applies to the demise of the plantation form studied by Ruef. If the local presence of organizations with dissimilar identities accelerates the decline of the plantation form, then the extent to which such organizations concentrate in geographical space would decelerate the demise of this form. Plantations would go extinct in the areas where organizations with dissimilar identities concentrate but would find a hospitable environment in other locales. Thus, research on the emergence and demise of organizations should incorporate considerations of the spatial distribution of organizational forms tied by relations of functional interdependence to the organizational form under study.

Organizations and the Social Organization of Residential Communities

An early study in this tradition by Aldrich & Reiss (1976) analyzed the immigrations of African Americans and Puerto Ricans, and the rise of small businesses with ownership drawn from these communities. In a subsequent paper, Aldrich et al. (1983) showed that ethnic markets define a limited carrying capacity for ethnic enterprises and high rates of founding, as circumscribed opportunity pushes minorities toward small-scale entrepreneurship. Scale issues restrict the range of organizational forms in such surroundings. In turn, such constraints lead to network isolation. The locational clustering of ethnic enterprises is also increased by access to low-cost labor (Bates 1994, Nee & Sanders 1996).

Olzak & West (1991) addressed the question of whether ethnic conflict affects the life chances of social movement organizations over a set of U.S. cities. They showed powerful effects of ethnic conflict, performance of the local economy, and organizational density on the rates of founding and failure of white immigrant and African American newspaper organizations. They also showed that violence encouraged white immigrants to found ethnic newspapers, whereas racial attacks significantly deterred the founding of African American newspapers. Mortality of immigrant newspapers did not increase when such ethnic groups were under

attack, but African American newspapers fared less well. So political environments interacted with economic environments in the context of local communities.

Simons & Ingram (2003) called attention to the consequences of political conflict on order-providing organizations. They studied founding rates of kibbutz organizations, an organizational form that, among other functions, performs an order-provision role in Israel's society. They found that these organizations were more likely to be founded in regions close to a border contested by an Arab population. However, as the state institutional capacity increased, this effect became weaker, presumably because a stronger state replaced the kibbutz organization as a supplier of social order.

Researchers have also studied how the geographical structure of social relations among corporate elites influences organizational activities such as board interlocks. Davis & Greve (1997) showed that corporate social actors turn to local peer organizations to legitimate their actions. Kono et al. (1998), in a study of the largest U.S. industrial corporations in 1964, found that organizations were more likely to share board members with organizations located in the same areas if they are located in cities that have a greater number of upper-class clubs. They explained this finding by suggesting that upper-class clubs are vehicles for the development of trusting relationships that lead to board nominations. Marquis (2003) replicated Kono et al.'s finding and also produced evidence of imprinting in board ties, as organizations situated in cities established early continued to exhibit a greater proportion of board ties to local companies. Marquis attributed this imprinting effect to emulation of locally legitimate templates of action.

Organizational processes feedback on community social organization (Aldrich & Waldinger 1990). Molotch et al. (2000) chronicled how Santa Barbara and Ventura, California, two adjacent cities that were similar 100 years ago, developed different identities. Their descriptive analysis illustrated how organizations and other social units shape the identity of places. Both cities had oil and beaches, but they used these resources differently. Amenities and the beachfront were stressed in Santa Barbara, in part because of recreational and tourist organizations established in Santa Barbara prior to the arrival of oil. Oil pumping dominated in Ventura, and oil's influence in local affairs led to the devaluation of the ocean front. Molotch et al. argued that these diverging city identities persist because they shape decisions that influence city development.

Research on absentee-owned and locally owned organizations also sheds light on the impact of organizations on community life. This work dates back to Goldsmith's (1946) study of agricultural communities in California and Mills & Ulmer's (1946) study of industrial cities in the midwest, which showed that communities dominated by large absentee-owned organizations tended to have anemic institutions and impoverished residents. Subsequently, sociologists turned attention to how absentee ownership affected the social and economic organization of the black ghetto. For example, Reiss & Aldrich's (1971) research on black ghettos in Chicago, Boston, and Washington, DC, found that absentee-owned businesses were less customer oriented, less likely to belong to a merchant's association, and

less optimistic about preventing crime than locally owned businesses. More recent work continues to emphasize the antagonistic relation between absentee-owned organizations and the community. In a sample of 1859 U.S. chemical plants in 2000, Grant & Jones (2004) found that absentee-owned plants (plants with headquarters out-of-state) emit more toxins (chemicals released on-site, weighted by their toxicity), on average, than do other plants. Similarly, a cross-sectional and lagged panel analysis of U.S. agriculture found that communities in agriculturally dependent counties exhibit lower levels of community welfare (i.e., higher unemployment levels, higher rates of violent crime) than communities in which a higher percentage of individuals are self-employed and operate small, independent businesses (Lyson et al. 2001). Galaskiewicz (1979a,b) reported research on interorganizational networks in a midwestern U.S. community of 32,000 residents. Large organizations with local headquarters and greater dependencies on the local economy tend to be more central in local exchange networks and, in turn, are also viewed by residents as being more influential in community affairs. Bluestone & Harrison's (1988) study of plant closing across the United States documented how managers of multilocal organizations milk profitable plants by taking their profits outside the area.

Friedland & Palmer (1984) argued that absentee-owned organizations hold power independently of political participation because they possess the capability to affect local economic growth positively by transforming capital into local profits and tax revenues or negatively by moving production elsewhere. Community leaders, by this logic, are forced to consider the interests of branches, lest the decision makers at corporate headquarters decide to shut down or relocate the plant. Managers of locally owned plants, though, are more likely than absentee-owned plant managers also to be owners and to be embedded in local social networks. In such a position, these managers are more likely to participate in community affairs to influence policymaking. The option to relocate is, consequently, less attractive to these organizations. This argument is supported by the findings of Romo & Schwarz (1995) in a study of New York manufacturing plants from 1960 to 1985. Subsidiary plants (branches) were more likely to migrate long distances than were autonomous plants.

Residential Community Structure

The manner in which organizations and other local institutions are connected to each other is an important defining feature of a community's structure. Saxenian (1994) argued that regional networks help explain why two otherwise similar regions (Route 128 in Massachusetts and Silicon Valley in California) moved along divergent paths after World War II. In the Route 128 area, companies were vertically integrated. This made adaptive change more difficult and encouraged secrecy and jealousy. Silicon Valley, in contrast, was characterized by networks joining specialized producers of various sizes. This encouraged entrepreneurial activity and openness to communications with those located outside the boundaries of a focal

organization. Consequently, Silicon Valley proved more flexible and sustained innovation over a longer period and across various technology areas (as innovation in one technology cooled down, it flared up in another). Silicon Valley adjusted to abrupt changes more quickly. Part of the Silicon Valley story is also the development of institutional mechanisms for regulating high rates of entrepreneurship and very rapid organizational growth. Suchman (1995) showed how law firms created standard means for organizing private equity investing companies, such as venture capital firms, startups, and the contractual relationships between those startups and existing, large, multinational corporations. Such arrangements diffused outward from the Silicon Valley law firms to corporate law firms in other areas.

Owen-Smith & Powell (2004) studied the biotechnology community in the Boston metropolitan area and found that changes in the pattern of relations underlying the local network influenced the benefits derived from network membership. When the local network was dominated by public research organizations committed to norms that made it easier for information to flow, organizations benefited from network membership in the form of higher patenting rates, and this effect did not vary depending on whether they occupied a central position in the network. In contrast, when the local network was dominated by for-profit organizations committed to norms that restricted the flow of information, firms that occupied central positions in the local network benefited more.

Ingram & Liffshitz (2005) showed how kinship relationships between owners of shipbuilding companies in the Clyde River region between 1711 and 1990 created a social cohesion to the local industry that both reinforced its geographic identity and provided survival advantages for the connected member of this organizational population. They compared the effects of such relations across subforms and argued that the corporate form impeded the formation of these personal connections and ultimately contributed to the decline of shipbuilding in this locale.

Surprisingly, sociological studies of community structure have given less attention to the composition of organizations present in a particular locale. This gap is accentuated by the fact that in the 1990s economists interested in the study of cities gave considerable attention to this dimension of community structure. In that literature the debate has revolved around the contrast between specialization and diversity (Glaeser et al. 1992). Some have argued that industries that are regionally specialized grow faster because they benefit most from the within-industry transmission of knowledge. Others have argued that cities that have a diversity of industries grow faster. The reason is that knowledge that comes from other industries is more valuable presumably because it is less redundant. Thus far the evidence is mixed. For example, Glaeser et al. (1992) found that specialization hurts employment growth, whereas city diversity helps it. Henderson et al. (1995) found that specialization accelerates the growth of mature industries but that diversity encouraged growth of new high-tech industries. A problem with this literature is that it suffers from data limitations and sample selectivity primarily because longitudinal data about multiple industries are notoriously difficult to assemble. For example, Glaeser et al. (1992) included an industry only if it was one of the six

largest industries in a city. So their sample overrepresents industries with a high degree of concentration. In contrast, Henderson et al. (1995) excluded 81 new cities from their analysis because they could not be matched in the comparison between 1970 and 1987. This reduced their sample to 224 SMSAs. Furthermore, Henderson et al.'s plant productivity data did not include plants that were short-lived because observations occurred only every five years. Although the evidence remains inconclusive as to whether specialization or diversity encourages local growth, the composition of economic activities is clearly an important feature of community structure that deserves more attention.

CONCLUSIONS

The purpose of this review has been to pull together and organize the burgeoning literature on organizations, location, space, and social context. Spatial considerations span both the organization of markets and other multidimensional social spaces, and also the various factors that are unevenly distributed over geographic space. We organized our discussion of these issues by juxtaposing two dimensions that we call functional complementarity and spatial differentiation. Organizations build relationships on the basis of what they do to or for each other. Some researchers study a single type of organization and are primarily interested in how that kind of organization fits in the broader society and how individual organizations compete for resource (or avoid competing). In a growing trend, researchers are concerned with relations between kinds of organizations as in market exchanges, relations in geographical space, or relations between organizations and agencies of the state that develop and enforce institutional arrangements by which organizations gain and defend legitimacy.

Organizations can be near to or far from each other along resource dimensions, occupying different portions of the overall volume of resources that are variably available over time. Sometimes, such resources are unevenly distributed in geographical space, so resources, including access to information emanating from other organizations and individuals, are more readily available in some locales than in others. In both cases, spatial differentiation assumes greater significance when the social organization of those resources is studied so that risk and opportunity are channeled through structural mechanisms.

We think these considerations are important in themselves, as the problems organizations face become more or less salient as these channels of risk and opportunity open and close. In addition, these issues offer the promise of linking organizational research with other areas of scholarly inquiry. Such fields as political sociology, stratification research, ethnic studies, and economics involve the study of phenomena that have reciprocal relationships with organizations, their structures, operating processes, human participation, and strategic orientation. So, for example, entrepreneurs can be defined as people who start new business organizations. Where and how they secure funding, equipment, employees, and real estate

are all driven by the community context in which the initial organization-building occurs. Sometimes, capital comes from professional private equity investors such as venture capitalists. In other circumstances, it comes from wealthy families for whom kin and ethnic identity are paramount. It is also true that in many societies immigrants secure their early participation in the economy through entrepreneurial activity. The constraints on the organizations they set up, and the hazards of organizational mortality, have much to do with the well-being of such ethnic group members. These factors, in turn, have impacts on crime and delinquency, political processes, and demographic mobility.

Community analyses offer relatively convenient sites for broader research programs partly because two of the most promising areas of inquiry—neo-institutional research and social network analysis—are typically studied in localized context. Network analysis becomes intractable if network boundaries are extended greatly. In addition, one of the most reliable of observations of networks is that propinquity matters. We are not saying that network analysis cannot be performed successfully at the national or world level (see, for example, Powell et al. 2005), but that it is more difficult and less common to do it this way. Similarly, neo-institutional analyses are often conducted over sets of political units. Partly this is because political processes often drive the development of institutional standards for behavior. More importantly, enforcement of such standards is partly local.

In addition, data are available for the analysis of communities and organizations that permits comparisons of organizational dynamics across interesting and important sets of circumstances. Such data allow researchers to use pooled cross-section and times series designs in which they can examine organizations distributed over many locales, sacrificing the length of the time period under study for greater spatial variability. By focusing on young organizational populations, as McKendrick et al. (2003) did so effectively, these research designs could also cover entire population histories, a necessary requirement for research on form emergence.

Besides helping us map the literature on organizational communities, Table 1 also helps identify where in this conceptual space intriguing research opportunities remain unexploited. We highlight one in particular. We think that simultaneous consideration of spatial and functional differentiation and complementarity can provide more nuanced views of the mechanisms underlying density effects, as the work of Ruef (2004) on form demise and McKendrick et al. (2003) on form emergence illustrates. Studies that omit spatial considerations would likely have attributed form decline and form emergence to the mere count of organizational populations tied by relations of interdependence. The consideration of geographic space, however, led to a deeper understanding of the social mechanisms underlying form decline and form emergence. Considering both spatial and functional dimensions raises interesting questions that can encourage new theoretical insights. For example, Podolny et al. (1996) found that being in a crowded area of technological space raises the hazard of semiconductor firm mortality. However, studies of geographical location suggest that organizations tend to benefit from being located close to organizations that occupy the same technological space (Owen-Smith & Powell 2004). Are the

findings of Podolny et al. driven by organizations that suffer the consequences of occupying a crowded niche but do not benefit from physical colocation? Does this mean that their findings are conditional on the degree of geographic dispersion of an industry? We think such questions offer interesting and exciting venues for expanding the study of organizational communities in new directions.

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