

How Development Occurs: Local Knowledge, Social Capital, and Institutional Embeddedness¹

Edward J. Malecki
University of Florida

Abstract

Places – urban and rural – are better off when they foster shared or public knowledge from which many firms can benefit. Such knowledge forms the basis of Silicon Valley and other creative regions. To create sufficient knowledge that it forms a basis for local competitiveness is difficult, and to sustain it is even more difficult as other regions compete. Some knowledge is social as well as economic; other knowledge is institutional, supported by local and regional institutions. The variations in knowledge, and the mobility of some knowledge and immobility of other knowledge, are part of what makes development so place-specific. Social capital and institutions are relatively immobile and help to cultivate development in some places but not in others.

Introduction

This paper is an attempt to think about how three concepts – local knowledge, social capital, and institutional embeddedness – influence, indeed catalyze economic development. Each of these concepts has crept into regional science over the past decade, but there is little evidence that they have been integrated into our mainstream understanding of how development takes place. Much of the explication of these ideas is based in economic sociology, where spokespeople such as Granovetter (1992) and Swedberg and Granovetter (1992) insist that economic action is a form of social action and that economic institutions are social constructions. Although these three phenomena are present in other regional contexts, this paper attempts to apply them to the specific case of rural development. All of them are “soft” variables that are critical to understanding why some communities are successful while others are not (McDowell 1995).

The special case of rural development stems from the characteristics that define rural areas. Hite (1997) lists three characteristics of remote and rural economies. They have low population density or are relatively poor, they are specialized, and they are economically conservative and sluggish in adjusting to changing market signals. The last of these is based on the concept of asset fixity and the low salvage value of specialized assets, a problem that penalizes rural areas most. The “rural penalty” stems from lower population

¹Paper prepared for presentation at the Meeting of the Southern Regional Science Association, Savannah, Georgia, April 1998. I thank Judy Stallmann for encouraging me to think about these issues, and Deborah Tootle for our collaborative work on which many of these ideas are based.

densities, the distance of rural communities from urban centers, and economic specialization in sectors other than information- or knowledge-intensive ones (Parker et al. 1989: 24-27). Eskelinen (1993) adds to this list a demographic dimension to “the rural problem”: an aging population and selective outmigration of those residents with the highest human capital. Schwartzweller and Davidson (1997) illustrate the penalty of remoteness with the example of remote dairy farms in Michigan’s Upper Peninsula, which are disadvantaged in several ways relative to those less remote locations (downstate).

However, if we turn to look at social, rather than economic, phenomena, we observe readily that not all rural communities are equally burdened by the “rural penalty.” Much of the rural disadvantage derives from the obvious handicap, relative to urban areas, in access to suppliers and customers, information, and labor (Vaessen and Wever 1993). The rural penalty may be exacerbated by falling transport costs and scale economies, both of which reinforce urban agglomeration (Hite 1997; Krugman 1995). But these phenomena assume that falling transport (and communication?) costs benefit urban areas more than rural areas. Indeed, the least dense and most remote areas may benefit most from telecommunications (Parker et al. 1989). Many dismiss the distance factor, citing the fact that telecommunications has effectively eliminated distance and remoteness (Cairncross 1997; O’Brien 1992; Parker et al. 1989: 34-35). A part of the “rural penalty” that persists is the continuing concentration of the newest and most advanced technology in large cities, combined with the presence of large corporations whose demand for telecommunications technology ensures that they will not be deprived in the near future. Despite the unquestionable benefit to rural areas from communications technology, technological change is unrelenting and favors urban areas first and most (Malecki 1998; Rowley and Porterfield 1993). More importantly, “the bases of today’s and tomorrow’s marginalization is not kilometres, but poor network connections, and less participation in the important development streams of society” (Oksa 1995: 199).

Perhaps more important is the issue of scale economies. Hite (1997: 236) says that “only in an environment where scale economies are relatively unimportant do the disadvantages of remoteness diminish as transport costs fall.” This is exactly what flexible specialization is about: shorter product life cycles, greater product differentiation and economies of scope, and greater skills (or human capital) among workers (Malecki 1997a). A local dimension of flexibility points toward a heightened need for entrepreneurship, since branch production plants are not likely to be a basis for future rural growth (Barkley 1993). Entrepreneurship is central to development, and it is the local environment that encourages and facilitates firm formation (Malecki 1994, 1997b).

Not all rural – or urban – environments are able to support entrepreneurs. Some local economies stifle entrepreneurship, including one-company towns and those dependent on mining and shipbuilding (Hjalager

1989). Such places have few examples of entrepreneurship to observe and little or no opportunity for entrepreneurial experience. In Sweden, one-company towns had the lowest birth rates of firms (among six types of places) in both manufacturing and non-manufacturing industries (Davidsson 1995). Home-based businesses in rural areas often are thought of as less dependent on local resources, especially the footloose “lone eagles” in producer services identified by Beyers and Lindahl (1996b). However, unlike other home-based businesses, which often lack local links, “lone eagles” and “high flyers” have links outside their local area (Carter et al. 1992; Dykeman 1992).

The following sections elaborate on three “grand ideas” that arguably hold out promise for development in rural areas. The first is local knowledge – a key idea in development thinking worldwide, centered around bottom-up development (as opposed to top-down) initiation and control. The second section examines the social dynamics of local development in the context of social capital. The third section extends both sets of ideas to the role of institutions. The paper reviews a broad set of literatures that, together, establish these three ideas as central to how development occurs.

Local Knowledge: Self-Development

“Local knowledge” is a phrase used by Geertz (1983) to describe “crafts of place”: skills, like gardening, politics, law, and ethnography, that “work by the light of local knowledge” (p. 167). This sort of knowledge is *local* not only in a spatial sense, but also in the context of the tacit knowledge used in work (Sachs 1995). Largely through the work of anthropologists and others, development strategies in developing countries explicitly work to incorporate local knowledge of physical environments and age-old customs appropriate to the setting. In an American context, Wolf and Wood (1997) criticize the technologies that allow precision farming because they commodify (make capital-intensive) and centralize agricultural information, thereby diminishing the importance of local knowledge of both farmers and extension agents.

Since the 1980s, development policies in developed countries also have emerged to embrace a much greater orientation on local (and informal mechanisms) as well as on the stimulation of entrepreneurship. The emphasis is to structure local growth “from below” with minimal central direction (Malecki and Tödting 1995; Stöhr 1990). In general, “local economic development activities have assumed the importance once attached to regional policy in both Europe and North America” (D’Arcy and Guissani 1996). However, “there is no obvious first best approach to local economic development” and each locality will depend on local institutions, priorities, and relationships (D’Arcy and Guissani 1996: 171).

The implicit recognition of local knowledge in rural development is the proposal of self-development initiatives (Fitchen 1991: 164-178; Flora et al. 1992, 1997; Green et al. 1993). These rely on the human

resources, financial resources, and ideas, information and technology (Everitt and Annis 1992) (Table 1). C. Flora et al. (1992) list similar influences under the label of a “flexible, dispersed leadership structure”: a rotation in community leadership positions, acceptance of newcomers into leadership roles in the community, and a favorable climate for participation by women and minorities. More important, perhaps, are the “organizational choices” regarding four issues: (1) appropriateness of the project to the local resource base, (2) organizational structure, (3) financing, and (4) linkages with the outside (Flora et al. 1992: 280).

The competitiveness of niche markets provides new opportunities for rural areas, but only when they are linked to markets. Both in resource- and craft-based manufacturing (ACEnet 1994; OECD 1995) and in producer services, entrepreneurs are able to serve niche markets from rural locations (Beyers and Lindahl 1996a, 1996b).²

External Knowledge Enhances Local Knowledge

Local knowledge alone is not enough anywhere, but perhaps particularly in rural areas. Compared to urban areas, “rural areas have a narrower knowledge base and are farther from specialized knowledge sources” (Pulver 1995: 6). The importance of links to outside, even global networks is a recurrent finding in recent research on industrial districts and technology districts (Amin and Thrift 1994; Maillat 1995; Storper 1993).

In rural locales, firms may be less influenced by the lack of a supportive local environment (Westhead 1995). Perhaps in part because the number of local competitors is smaller, survival rates of rural firms are higher than of urban firms (North and Smallbone 1996; Stearns et al. 1995). Most rural firms can thrive in the absence of agglomeration economies only when their networks are nonlocal rather than (or more than they are) local. These nonlocal network links frequently rely on contacts made by an owner-manager in previous employment (Malecki and Veldhoen 1993; Vaessen and Wever 1993). While fewer nearby customers, suppliers, and similar firms make local networking difficult, that does not mean that there are no networks. The level of innovativeness and competitiveness of firms in rural areas – or any area – depends not only on the degree to which firms are tied to *local* networks of suppliers – the industrial district model – but also on the presence of links to *external* markets (Camagni and Capello 1990; Marchesnay and Julien 1990).

Links to the outside – what Flora and Flora call *vertical links* – depend to a large degree on the presence of gatekeepers. Gatekeepers serve as a bridge between organizations, frequently translating across

² The concerns of community development in urban areas appear to be different, yet the process still involves self-help, institutional integration, and consensus-building (Sites 1998).

discipline-specific terminologies and organizational cultures. They are proactive in acquiring external information and, although they might use it personally, they also are interested in passing it on to others in the organization (or community) for their use (Falemo 1989; Macdonald and Williams 1994). While the role of gatekeepers in selecting and filtering information is critical, this role is rarely institutionalized or formalized. Importantly, gatekeepers see their acquisition of information as part of a *quid pro quo*, whereby they are obligated to supply information in return, as a means of building or maintaining trust in counterparts in other organizations.

Some gatekeepers function as “community entrepreneurs” or “social entrepreneurs” (Cromie et al. 1993; Johannisson 1990; Johannisson and Nilsson 1989), who have the development of their local community as a goal. These community entrepreneurs or “key individuals” use their extensive personal contacts to communicate across sectors, linking public and private sectors (Cromie et al. 1993; Stöhr 1990). Local growth in small towns seems to depend on the outside contacts of these “influentials,” especially those in the private business rather than government (McGranahan 1984, 1990; Sorensen and Epps 1996). With economic information, they provide the necessary sorting and evaluating that others – and especially small-firm owners and managers – are less able to do (Rosenfeld 1992: 315). Lorenz (1992) refers to these as “political entrepreneurs,” policymakers who encourage inter-firm communication and cooperation. Increasingly, local policies involve *partnerships* between public and private sector actors (Bennett and McCoshan 1993), and gatekeepers are needed to link the two sectors. The “participatory, partnership nature” of local self-improvement programs has made people from state agencies, firms, universities, and consultancies learn about each other’s capabilities and needs (Isserman 1994: 89).

Bryant (1992) contrasts the traditional, manufacturing-oriented *industrial development* approach to local development (also called “smokestack chasing” – a “local brand of the top-down” approach to development) with the *community development* approach, which is characterized by greater representation, a long-term, strategic planning framework, and proactive support for local businesses. Zekeri et al. (1994) found that “communityness” – a combination of solidarity and activeness – was significantly related to nontraditional community development: human services and recreation and tourism, as opposed to business and industry. McGuire et al. (1994) have tested Flora et al.’s view of entrepreneurial development capacity, including the strength of horizontal and vertical links outside the community. Of the two, only horizontal links with other communities were significantly related to development capacity.

The trend toward a greater local entrepreneurial role, which grew greatly in the 1980s, involves new forms of inter-local competition, based on knowledge of the process of entrepreneurship rather than on zero-sum smokestack chasing (Blakely 1994; Eisinger 1988; Isserman 1994; Leicht and Jenkins 1994). However,

larger, better-funded industrial development groups, which tend to be those in large places, are better able to create and maintain connections to other groups and individuals. Their external connections and the knowledge they provide yield a better mix of incentives, promotional advertising and ultimately, greater job creation (Humphrey et al.1989).

Strategies of local governments can be defensive, expansive, or pioneering (Vartiainen 1988). *Defensive strategies* are “a short-term, quick-fix solution” (p. 91). *Expansive strategies*, by contrast, aim at facilitating growth of existing industries, easing the formalities, improving cooperation and communications between firms, and promoting technological change. But these goals require expansive sectors; otherwise the prospects of the region will not be improved. *Pioneering strategies* encourage innovations and the creation of new enterprises. These are long-term, supply-side strategies that promote entrepreneurship by identifying, encouraging, forecasting, and creating the prerequisites for potential entrepreneurs; by finding and activating market niches, local know-how, and material bases; and by creating an atmosphere friendly and receptive to entrepreneurship (p. 91).

Any local development activity, including marketing a community (whether to tourists, retirees and other residents, business and industry, or export markets), requires amassing local political support and a priority toward investments needed to effect a change. Typically marshaling local political support is done by a coalition of those who have a vested interest in infrastructure improvements and the growth of the local market, such as banks, newspapers, and landowners. To involve others with diverse interests is difficult. Perhaps even more difficult is institutionalizing collective learning processes locally (Knight 1995). And it is this collective learning that is the key to self-development.

Creating a “learning region”

For many authors, the current regional “best practice” is to be a *learning region* (Asheim 1996; Florida 1995; Simmie 1997). The external economies generated by strong firms, a labor and supplier base, and knowledge base are more often local or regional than national (Porter 1990). The archetype of a learning region is the industrial district or innovative milieu. The vitality of these places revolves around two phenomena: (1) the learning efficiency of these areas, based on cultural norms that are not the same everywhere nor easily transplanted or created (Saxenian 1994; Sweeney 1996), and (2) interaction, which enhances innovation and learning (Maillat 1995). The interesting point for rural development is that agglomeration, while often related to learning dynamics, is no guarantee of them (Asheim and Isaksen 1997; Johannisson et al. 1994).

When found in combination with a technical culture and strong institutions, learning proceeds

efficiently based both on local knowledge and assets and on links to networks elsewhere (Maillat 1995; Storper 1995) (Figure 1). Learning is territorialized (localized or endogenous) in three ways: agglomeration, indirect externalities, and untraded interdependencies (Storper 1995, 1997). The strength of the local learning system depends greatly on competent governments and firms working to understand and support one another for the benefit of the region and its population. This mutual support system hinges on social capital, the topic of the following section.

Despite the ubiquitous example of Silicon Valley, it does not take high technology or frontier industries to sustain an economy or to create the benefits of economic development – local linkages and continuing entrepreneurship. Indeed, Hansen's (1993) work in Denmark demonstrates that low-tech industries also can be innovative and competitive on a global scale. In order to be competitive, firms need a web of interactions and information flows within and into the region. Flows and linkages to the outside (e.g. via branch plants) drain a region of its ideas, talent, and control, unless they are balanced by a receptivity to new ideas coming from the outside. Some places are simply more open to new ideas. Indeed, high-technology firms in a sparse environment may well provide far fewer benefits than low-tech firms (Chandra and MacPherson 1994).

The easy answer of the 1980s to the failure to generate local (or indigenous) growth was the relative scarcity of R&D carried out in some regions, and this appeared to doom rural places to permanent backward status. R&D – especially that by firms – is important, because it represents an “active” outlook, a level of technological progressiveness, and an “open mind,” reaching out for new information and being receptive to it. Technically progressive firms take part in information exchange, they continually search for information, and they maintain internal communication (Sweeney 1987). Increasingly, because we are looking for them, these characteristics are found in rural areas (Beyers and Lindahl 1996b). Although many small firms are innovative, they typically undertake no R&D and are heavily reliant on their external networks for information. Innovativeness appears to require *both* internal and external technical know-how (Julien 1995; MacPherson 1992; Rothwell and Dodgson 1991).

Dubini (1989) studied six cities in Italy to determine their environments for entrepreneurship, distinguishing between “munificent environments” and “sparse environments” (Table 2). Put briefly, access to other entrepreneurs, to consultants, and to sources of information are far more readily available in munificent settings than in sparse environments (Dubini 1989). Perhaps most important is the first factor that Dubini lists as a key gap in sparse environments: the lack of an entrepreneurial culture and values, networks, special organizations or activities aimed at new companies. The presence of these cultures, values, networks, organizations, and activities represents both local knowledge and social capital. That attitudes and culture are

important is well-established – at times surpassing the variation from local economic structure (Kristensen 1994; Spilling 1991).

As I recently reviewed the literature on entrepreneurial environments, it became clear that the characteristics of a successful place rests on the ability of firms to assemble critical sets of factors (such as talent, technology, capital, and know-how) – mainly from the local environment (Malecki 1994, 1997b). The environment for a firm or a community involves a host of industrial, technological, and economic linkages, many of which are public resource endowments in the locale, state or region. As with most everything in regional development, the ideal environment is a setting where firms take advantage of agglomeration and proximity to utilize nearby sources of information, skilled labour, technology, and capital. Peripheral and rural areas stand in sharp contrast: networks have not developed, innovation and technology are not native to the local culture and economy, and firms struggle to remain competitive. Such locales are among Dubini's (1989) sparse regions, where little networking or innovative entrepreneurship takes place (Davidsson 1995). But firms do turn to external sources, in effect, substituting nonlocal resources for the sparse set of (or nonexistent) local resources (Vaessen and Keeble 1995). Unable to maintain an R&D effort and “a systematic technology watch,” small firms use networks as “antennae” and “filters” of information (Estimé et al. 1993: 56). Creating a networked, learning region is one of the greatest regional policy challenges as we move into the 21st century (Cooke 1996).

The importance of networks

Empirical research consistently finds that learning about technologies occurs primarily via informal channels of communication – through interpersonal contacts, including family, friends, and colleagues.³ Business networks begin as a set of interpersonal contacts, which provide social support and self-confidence, a supply of resources needed by the business, and strategic capacity to learn and organize for new activities. It is important to distinguish between a firm's *trade network*, involving linkages between producers and users of traded goods and services, and its *knowledge network*, which focus on the flow of information and exchange of knowledge irrespective of its connection to the flow of goods (Gelsing 1992).

Even small firms have extensive contact networks, comprised mainly of business contacts associated with commercial organizations, such as customers, consultants, and other managers (Falemo 1989). As with communities, the use of *external resources* is critical to the success of flexible firms (Jarillo 1989). For small

³ For additional references on this topic, see Malecki (1994, 1997b).

firms and new firms, contacts are especially likely to be local. For rural areas, the lower density of local firms is a disadvantage. By drawing upon many sources, networks provide “thick” information not available from a single source (Lorenzoni and Baden-Fuller 1995). Mønsted (1993) distinguishes among three types of networks, each serving a different function for the entrepreneur: (1) networks for service and assistance, i.e. to solve a specific problem; (2) networks for information and structuring, especially for knowledge about whom to contact for a specific purpose; and (3) networks for entrepreneurship and product development. These networks are not needed in a simply sequential manner. In each type of network, local trust-based relationships are critical (Mønsted 1993). In the absence of trust, communication is less frequent and full cooperation does not occur (Lyons and Bailey 1993).

Two dialectical processes in networks are competition and cooperation. Together, these processes create relationships that are stable but not static; they gradually change in response to changes external and internal to the network.

The continuing processes of interaction between firms are stabilised since they take place within the context of existing relationships. However such relationships are also changing, partly in response to events external to the relationships and partly because of the transactions which help to define them. . . Network inertia and interdependencies slow and shape change. Thus networks do not have life cycles. They transform over time, merge, shift in focus and membership. . . The continuous interaction between firms offers, on the one hand, the opportunity for innovation and, on the other, the existence of a known and predictable environment in which it can be realised (Easton 1992: 23-24).

The effect of networks is clearly distinct from that of agglomeration. A case in point is the creation of science parks or research parks as a policy that attempts (at least implicitly) to create complexes of inter-firm interaction through proximity and agglomeration or clustering. However, as Massey et al. (1992) and Johannisson et al. (1994) have shown, interaction does not necessarily take place despite geographical proximity; “something else” is needed. This “something else” often is described simply as *synergy* (Castells and Hall 1994), and it requires the presence of social structures of sociability, trust, and an industrial structure that demands interaction among firms (e.g. linked industries making flexibly changing products) (Amin 1994).

As important as networks – local and nonlocal – are, they do not provide all the things that make development happen. Also needed are a collective purpose and collective behavior, as opposed to entrepreneurial greed, that can benefit all entrepreneurs in a community. That collective behavior creates social capital.

Social Capital

Social capital, a concept put forward by Jacobs, Loury and, most prominently, by Coleman (1988), has attracted a great deal of attention.⁴ However, Coleman's definition – that “social capital is defined by its function” and “inheres in the structure of relations between actors and among actors” (Coleman 1988: S98) has proven to be less than enlightening for many trying to apply it. Portes and Sensenbrenner (1993) broaden Coleman's concept to incorporate Granovetter's (1985) analysis of embeddedness. They redefine social capital as “those expectations for social action within a collectivity that affect economic goals and goal-seeking behavior of its members, even if those expectations are not oriented toward the economic sphere (Portes and Sensenbrenner 1993: 1323). These expectations include shared values, reciprocity, solidarity, and enforceable trust. They illustrate the presence (or absence) of social capital among various immigrant groups and suggest that some negative behaviors can result, such as free riding and restrictions on individual freedoms, in addition to the positive behaviors on which Coleman focused.

Social capital is closely related to the topic of networks (the “structure of relations” that Coleman refers to), which are best developed in an economic development context in the body of research on industrial and marketing networks of firms (Malecki and Tootle 1996). External resources are especially essential for small firms, and it is for small firms that cooperation is most important (Mariti 1990; Robertson and Langlois 1995). Indeed, Fountain (1998: 89) asserts that “the constituent elements of social capital are trust, norms, and networks.”

Social capital also has been interpreted in an intra-organizational context. The collective view of social capital is seen in the interpretation of corporate culture of Chung and Gibbons (1997). They demonstrate that social capital is distinct from human capital (Figure 2). Human capital must be integrated into the organization (or community) through socialization, network development, and information sharing. Culture functions both as *superstructure* in an organization (or community) to provide vision to which participants commit. Vision reduces uncertainty for members as it directs and focuses their attention and effort. Culture as *sociostructure* provides social capital to the firm (or community), providing the “social glue” that knits people together through learning, information exchange, and norms and sanctions that govern behavior. Firms seek social capital because their perceived legitimacy influences their capacity to attract and retain resources, customers, and partners. Thus, social capital can be seen as a strategic resource, not uniformly available, mobile, or easily

⁴ For useful, but very different, reviews of the concept of social capital, see Fountain (1998) and Flora et al. (1997).

traded or imitated (Oliver 1996: 177-178).

This sociological interpretation of social capital is not directly applicable for development; it is the political translation that is more useful – that development takes place because of *social capital* – the mesh of public and private sector interactions that foster economic and social activity (Putnam 1993). Building on this thinking, Flora and Flora (1993) and Flora et al. (1997) have proposed elements of an “entrepreneurial social infrastructure” which represents the presence of social capital in a region. Three dimensions are critical: symbolic diversity (signifying openness), resource mobilization (indicating equality and a willingness to invest collectively and locally), and quality of networks (which should be diverse, horizontal, and vertical).

Social capital is fundamentally cultural: “a capability that arises from the prevalence of trust in a society or in certain parts of it” (Fukuyama 1995: 26). Social capital, unlike human capital (with which it often is confused because of Coleman’s seminal article) is not created or acquired by a rational investment decision of an individual in education or training.⁵ It occurs through the acquisition of norms (or “virtues” such as loyalty, honesty, and dependability) which are common to a group. Thus, social capital cannot be acquired by individuals acting alone; it is created and transmitted through cultural mechanisms like tradition, religion, or historical habit, which created shared ethical values and a common purpose (Fukuyama 1995: 26-27).

The concept of social capital, as distinct from physical and human capital, facilitates market transactions (Coleman 1988; Putnam 1993). This occurs in three ways:

- the creation of a system of generalized reciprocity
- the establishment of information channels, providing sorted and evaluated information and knowledge
- the simplification of market transactions by instituting norms and sanctions by which economic exchanges can occur, bypassing costly and legalistic institutional arrangements associated with market transactions.

Thus social capital depends upon, and reinforces, shared values and trust-based relationships that go beyond purely market transactions. “Since the relationship is a positive, reciprocal one, there is the potential for a ‘virtuous’ circle: an increase in the level of civic participation leads to an increase in positive beliefs about others, leading to greater participation, and so on” (Brehm and Rahn 1997).

⁵ Much of the research on social capital focuses on the contribution of social capital to the production of human capital – that is, on how community or ethnic norms and networks (social capital) enhance the effect of schooling. See, for example, Hobbs (1995).

Trust in Social Capital

Social capital and network relations rest upon one into one of the most “noneconomic” variables imaginable: *trust*. However, Granovetter (1985) and others have elaborated the role of trust in economic relations. Sako (1992: 37-47) details three types of trust. The first, *contractual trust*, is essentially the mutual expectation that promises made are kept. The second type, *competence trust*, concerns technical and managerial competence to carry out a task, and is demonstrated in accepting goods from a supplier without inspecting them. The third type, *goodwill trust*, refers to mutual expectations of open commitment to each other, seen in a willingness to do more than is formally expected, such as sharing of information. (Sabel (1992) uses phrases such as “negotiated loyalty.”)

Trust creates and reinforces mutual obligations and cooperation, as opposed to legalistic, arms-length contractual relations (Casson 1990: 105-124; Sako 1992). Trust also requires personal relationships that transcend the contact at hand, reinforced by face-to-face relationships. Trust relationships are may result in a supplier exceeding the contractual requirements, whether by early delivery, higher quality, or some other means of assuring goodwill (Sako 1992). Obligational contractual relations (OCR), common among Japanese firms, are more than an economic relationship; they also are a social relation between trading partners based on mutual trust. The development of institutional, formal substitutes for trust – via regulation, law, and legislation – evolved as the American economy grew to cover greater distances in the late 1800s (Zucker 1986). The legalistic, arm’s length contractual relations that have resulted are functional substitutes for trust, and seem to thwart the development of cooperative relationships (Granovetter 1985).

Interpersonal trust remains important in local contexts. In a regional setting, especially in innovative milieux, trust operates as the short-cut mechanism for communication and cooperation between firms (Hansen 1992). Harrison (1992, 1994) suggests that trust and the embeddedness of economic relationships into “the deeper social fabric” or the communal, noneconomic institutions of the local area, is what distinguishes industrial districts from other localized agglomerations of firms (Harrison 1992: 479).

The basis for trust seems to be that the actors have certain important values and norms in common. . . Through the combinations of economic and social relationships in the network, the information becomes rich, redundant and cheap (Hertz 1992: 110).

Trust is difficult to measure, of course, but it forms the basis for the interactions that define a culture – national, regional, or local – and that allow values and norms to be passed on to succeeding generations (Fukuyama 1995).

In inter-firm relationships, most indicative of trust are unstandardized or nonroutine information exchange (Gelsing 1992). Relationships between firms, like those between people (which they typically are),

take time to develop. Larsson (1993) suggests that the progression from arm's-length, market exchanges to trust-based cooperation takes about two years, with increasing benefits over time in information and technical innovation. The "continuous interaction between firms offers, on the one hand, the opportunity for innovation and, on the other, the existence of a known and predictable environment in which it can be realised" (Easton 1992: 23-24). Benefits such as these are difficult to identify empirically, a fact that may inhibit the widespread creation of small-firm networks (Reese and Aldrich 1995; Rosenfeld 1996).

Although information networks are most dense in urban agglomerations, information can be enhanced in less munificent environments as well. In particular, the provision of intermediaries or liaisons who are technically proficient can greatly raise the level of knowledge in a region (Britton 1989; Sweeney 1987). This is the explicit goal of the broker-led technology, training, and marketing networks established in Denmark (Huggins 1996).

Institutions and Institutional Embeddedness

At the national level, it is clear that institutions shape the path of growth (Zysman 1994). One extremely useful embodiment of institutional analysis is the concept of national system of innovation (Nelson 1993). The perspective of the Danish research team on national systems of innovation (Lundvall 1992) is both more process-oriented and more complex than that of many others, focusing on learning, social embeddedness, and the factors, linkages, and public-sector roles outlined by Porter (1990).

The local institutions that support learning in firms and in workers comprises what can be called a *regional system of innovation*, similar in nature to national system of innovation (Arcangeli 1993; Cooke et al. 1997; Cooke and Morgan 1994b; Doherty 1998). The regional system (Figure 3) links global knowledge of generic technologies to specific applications produced by local firms (Arcangeli 1993). It is the firms in an area on which the innovation system relies, and public structures play only a supportive role (Cooke and Morgan 1994b). Many of the greatest challenges are people-related: the key network people must have networking skills, be psychologically open, combine technology, business, management, and marketing skills, must be able to convince firms to join networking activities, must themselves be innovative and initiative-taking, and be well-networked within their own country as well as with innovation centers in Europe, Japan and North America (Cooke 1996: 170).

Cooke and Morgan (1993) suggest that we can characterize five key elements of a "networked region":

1. A thick layering of public and private industrial support institutions;
2. High-grade labour-market intelligence and associated vocational training;
3. Rapid diffusion of technology transfer;

4. A high degree of interfirm networking; and, above all,
5. Receptive firms well-disposed towards innovation.

These characteristics are similar to Rosenfeld's (1997) necessary conditions for clusters: R&D capability, knowledge and skills, human resource development, proximity of suppliers, capital availability, access to specialized services, machine and tool builders, intensity of networking, social infrastructure, entrepreneurial energy, innovation, and shared vision and leadership. While a daunting list, Rosenfeld finds that clusters can be found in rural areas and that policy actions can make a large difference.

Through local, decentralized policies, places are attempting to create milieus and *regional and local systems of innovation* and local institutions to support entrepreneurship (Camagni 1995). Policies are particularly challenging in the case of lagging regions. In parts of peripheral Europe, it has been found to be most useful to integrate policies that address different aspects of the local environment (e.g. entrepreneurship, infrastructure, and training), that target existing local knowledge, and that are selective in the number of sites in order to focus resources sufficiently (Camagni 1995).

The propensity toward networking behavior by active, alert firms as well as a strong local institutional base help to support industrial modernization efforts. Shapira, Roessner, and Barke (1995: 69) note:

Industrial modernization is . . . a problem with multiple dimensions. Addressing the problem at the 'micro' level of the firm and its managers is critical; but the problem also involves 'macro' economic, technological and social policies, as well as 'meso' issues of business relationships and practices, institutional linkages and inter-firm networks, and public-private cooperation.

The system in Baden-Württemberg, Germany, is considered the best system of institutions, providing training, information and R&D that support innovation. Small firms do not have to bear the burden of flexible production; "many of the costs . . . are shared by or embedded in a deep network of organizations and practices in the political economy" of the region (Herrigel 1993: 17). Indeed, the institutional thickness is so great and redundant that Baden-Württemberg is a model of a networked region (Cooke and Morgan 1994a). Some believe that the institutional thickness also has in some ways encouraged firms not to collaborate, since it has allowed them to draw upon local institutions, and upon large firms such as Robert Bosch, rather than upon other small firms (Grotz and Braun 1993; Mueller and Loveridge 1995).

Variations on the theme of institutional thickness include the idea of a local or regional ecosystem, a "constellation of specialized enterprises" with which firms can link (Bahrami and Evans 1995). The presence of local "community entrepreneurs," people with local knowledge and an ability to tap into local resources, contributes greatly to institutional thickness (Amin and Thrift 1993, 1994). Examples of institutional thickness

are found in rural Denmark (Illeris 1992) (Figure 4), and in Austin, Texas. The “Technopolis wheel” of Smilor, Gibson, and Kozmetsky (1989) suggests that there is a critical need for many local actors and institutions in a region to interact. When this happens, they suggest, a place can successfully be seen as having an entrepreneurial culture. They identify seven “segments” within the Austin, Texas, area: the university, large technology firms, small technology spin-off firms, the federal, state, and local governments, and support groups, similar to Figure 5. “Influencers” or leaders in one segment form networks by linking to other segments, acting as gatekeepers between organizational segments. These institutions provide know-how to a region in the form of educational programs, technical support programs, capable local advisors, and professional support organizations, as well as incubator organizations and business networks (Smilor and Feeser 1991). Scott (1996) proposes a similar institutional infrastructure specific to the furniture sector in Southern California (Figure 6). Institutions must be industry-specific as well as place-specific to be effective. Acting together, the various “local players” can stimulate an innovative milieu by creating synergies of interaction and learning within an area, and linking with the technological and market environments outside the region (Maillat 1995).

To affect a region’s development, the sorts of institutions that evolve depend on the historical, cultural, social, and political setting, as well as on the economic conditions present in the region. What is sometimes most difficult in backward regions is to form network links with the global market and its information networks, yet this is perhaps the most important task of all (Malecki and Tödting 1995). Finally, the institutions that assist small businesses should be entrepreneurial and flexible, in order to respond to the differentiated and evolving needs of their local environments (Gibb 1993; Johannisson 1993).

All of the elements discussed in this paper – local knowledge, social capital, and institutional thickness – have been incorporated into recent attempts to create networks (Indgaard 1996; Malecki and Tödting 1995; Malecki and Tootle 1996, 1997; Sommers 1998). Throughout the USA, for example, initially inspired by Piore and Sabel (1984), several networks have emerged to create the sorts of interfirm cooperation found (especially) in Italy and Denmark (Bosworth and Rosenfeld 1993; Hatch 1988; Rosenfeld 1989-90). The common element of networks presently in place in the USA is that each has a coordinator or broker identified – an individual who serves as the hub and gatekeeper for the network of firms. The network coordinator, who may be a private consultant, an employee of a local economic development agency, or a firm owner or manager, appears to be particularly critical to network success or failure (Bosworth and Rosenfeld 1993).

What is perhaps most striking is the diversity in the origins, histories, local contexts, and purposes of the networks. Each network is distinct in the way in which it is “embedded” in its local (and state) politics, society, culture, and economy (Malecki and Tootle 1997). In order to be successful, a network, like any

institution, must be embedded within the local socioeconomic structures in which it is located (Granovetter 1985). Describing the workings of several networks in Pennsylvania, Sabel (1992: 234) concludes that what matters most is “the social system by which packages of programs were defined and administered, rather than the precise definition of any single program or service.” This means programs wherein actors define their own needs, based on cooperation among the actors in particular industries in particular locales. However, this also results in greater variety because of emphasis on local knowledge in addition to nonlocal links, and fewer models that are easily replicated in other places.

Coordination of the many aspects of the policy system will not work unless the private sector is part of the regional technological infrastructure and part of the networks operating there. An “infrastructure for collaboration” between public and private sectors will resolve some of the ignorance and antagonism that frequently exists between the two sectors. In addition, worker skills and attitudes (cooperative rather than antagonistic) to produce quality work are among the “invisible” factors in a local economy (Doeringer and Terkla 1990; Kanter 1995). To these we can add the “institutional thickness” that defines the collective order of a local economy, providing the coordination necessary for a productive local economy.

McDowell (1995) and Shaffer (1990) see an explicit role for institutions in community development. “Economically viable communities” provide support for those starting new businesses, monitor public sector activities at all levels, have a community strategic economic development plan, and other ways that show an openness to new ideas. The “supportive structures” include both community development organizations and external support organizations (Wilkinson and Quarter 1995). Perhaps most importantly, the institutional structures must be able “to evolve successfully as political and economic systems change” (Barkley 1995: 1257). This “adaptive learning” is a key to rural development (Kraybill and Weber 1995).

Conclusion

Concern with competitiveness has prompted a more long-term perspective about economic development, and it has shown the significant advantages to be gained from investments in human capital. Competition based on entrepreneurship is an improvement over that centred on low wages, low taxes, and undervaluing of education. Over the long run, regions will be better off for having devoted money to education at all levels, to investments in public infrastructure (whether justified under the rubric of quality of life or not), and to thinking in terms of economic diversity and competitiveness.

Policies based on the experience of successful places, then, are not likely to work in situations where networks and active firms are not part of the local culture. Some places are simply more open to new ideas. Regional culture is created and transmitted to future generations through education, training, and acquired

experience. Where institutions are present and well-functioning for passing on a supportive culture, it is likely to endure. Only active learning regions comprised of active, innovative firms will be able to take advantage of external sources of knowledge. The social processes reviewed in this paper – local knowledge, social capital, and institutions – may be more important to regional and local economies than the traditional considerations of economic development. All three of these are brought together in the process of entrepreneurship, and that is why it has taken on such prominence here. In all these social processes, people – skilled, adaptive people – are the key element in the networks that tie a place to other places and keep innovativeness alive.

References

- ACEnet (1994) *Creating High Performance Communities Through the Development of Learning Consortia*. Athens, OH: Appalachian Center for Economic Networks.
- Amin, A. (1994) The difficult transition from informal economy to Marshallian industrial district. *Area* 26: 13-24.
- Amin, A. and N. Thrift (1993) Globalization, institutional thickness and local prospects. *Revue d'Economie Régionale et Urbaine* n° 3: 405-427.
- Amin, A. and N. Thrift (1994) Living in the global, in A. Amin and N. Thrift, eds. *Globalization, Institutions, and Regional Development in Europe*. Oxford: Oxford University Press, pp. 1-22.
- Arcangeli, F. (1993) Local and global features of the learning process, in M. Humbert, ed. *The Impact of Globalisation on Europe's Firms and Industries*. London, Pinter, pp. 34-41.
- Asheim, B.T. (1996) Industrial districts as 'learning regions': a condition for prosperity. *European Planning Studies* 4: 379-400.
- Asheim, B.T. and A. Isaksen (1997) Location, agglomeration and innovation: towards regional innovation systems in Norway? *European Planning Studies* 5: 299-330.
- Bahrani, H and S. Evans (1995) Flexible re-cycling and high-technology entrepreneurship. *California Management Review* 37 (3): 62-89.
- Barkley, D. (1993) Manufacturing decentralization: Has the filtering-down process fizzled out? In D. Barkley, ed. *Economic Adaptation: Alternatives for Nonmetropolitan Areas*. Boulder: Westview Press, pp. 29-48.
- Barkley, D.L. (1995) The economics of change in rural America. *American Journal of Agricultural Economics* 77: 1252-1258.
- Bennett R.J. and A. McCoshan (1993) *Enterprise and Human Resource Development: Local Capacity Building*. London: Paul Chapman.
- Beyers W.B. and D.P. Lindahl (1996a) "Explaining the demand for producer services: is cost-driven externalization the major factor?" *Papers in Regional Science* 75: 351-374.
- Beyers W.B. and D.P. Lindahl (1996b) "Lone Eagles and high fliers in rural producer services," *Rural Development Perspectives* 11 (3) June: 2-10.
- Blakely, E.J. (1994) *Planning Local Economic Development: Theory and Practice*, 2nd ed. Thousand Oaks, CA, Sage.
- Bosworth, B. and S. Rosenfeld (1993) *Significant Others: Exploring the Potential of Manufacturing Networks*. Chapel Hill, NC: Regional Technology Strategies.
- Brehm, J. and W. Rahn (1997) Individual-level evidence for the causes and consequences of social capital. *American Journal of Political Science* 41: 999-1023.
- Britton, J.N.H. (1991) Reconsidering innovation policy for small and medium sized enterprises: the Canadian case. *Environment and Planning C: Government and Policy* 9: 189-206.
- Bryant, C.R. (1992) Community development and changing rural employment in Canada, in I.R. Bowler, C.R. Bryant, and M.D. Nellis, eds. *Contemporary Rural Systems in Transition*, vol. 2: *Economy and Society*. Wallingford: CAB International, pp. 265-278.
- Cairncross, F. (1997) *The Death of Distance: How the Communications Revolution Will Change Our Lives*. Boston: Harvard Business School Press.
- Camagni, R. (1995) The concept of innovative milieu and its relevance for public policies in European lagging regions. *Papers in Regional Science* 74: 317-340.
- Camagni, R. and R. Capello (1990) Towards a definition of the manoeuvring space of local development initiatives: Italian success stories of local development – theoretical conditions and practical experiences, in W.B. Stöhr, ed. *Global Challenge and Local Response*. London: Mansell, pp. 328-353.
- Carter, R.B., H.E. van Auken, and M.B. Harms (1992) Home-based businesses in the rural United States economy: differences in gender and financing. *Entrepreneurship and Regional Development* 4: 245-257.
- Casson, M. (1990) *Enterprise and Competitiveness*. Oxford: Clarendon Press.
- Castells, M. and P. Hall (1994) *Technopoles of the World*. London: Routledge.
- Chandra, B. and A.D. MacPherson (1994) The characteristics of high-technology manufacturing firms in a declining industrial region: an empirical analysis from western New York. *Entrepreneurship and Regional Development* 6: 145-160.
- Chung, L.H. and P.T. Gibbons (1997) Corporate entrepreneurship: the roles of ideology and social capital. *Group and*

- Organization Management* 22: 10-30.
- Coleman, J. (1988) Social capital in the creation of human capital. *American Journal of Sociology* 94: S95-S120.
- Cooke, P. (1996) The new wave of regional innovation networks: analysis, characteristics and strategy. *Small Business Economics* 8: 159-171.
- Cooke, P., M. Gomez Uranga, and G. Etxebarria (1997) Regional innovation systems: institutional and organisational dimensions. *Research Policy* 26: 475-491.
- Cooke, P. and K. Morgan (1993) The network paradigm: new departures in corporate and regional development. *Environment and Planning D: Society and Space* 11: 543-564.
- Cooke, P. and K. Morgan (1994a) The creative milieu: a regional perspective on innovation, in M. Dodgson and R. Rothwell, eds. *The Handbook of Industrial Innovation*. Aldershot: Edward Elgar, pp. 25-32.
- Cooke, P. and K. Morgan (1994b) The regional innovation system in Baden-Württemberg. *International Journal of Technology Management* 9: 394-429.
- Cromie, S., S. Birley, and I. Callaghan (1993) Community brokers: their role in the formation and development of new ventures. *Entrepreneurship and Regional Development* 5: 247-264.
- D'Arcy, É. and B. Guissani (1996) Local economic development: changing the parameters? *Entrepreneurship and Regional Development* 8: 159-178.
- Davidsson, P. (1995) Culture, structure and regional levels of entrepreneurship. *Entrepreneurship and Regional Development* 7: 41-62.
- Doeringer, P.B. and D.G. Terkla (1990) How intangible factors contribute to economic development: lessons from a mature economy. *World Development* 18: 1295-1308.
- Doherty, P. (1998) Regional innovation and industrial policies and strategies. *Regions* 213: 13-17.
- Dubini, P. (1989) The influence of motivations and environment on business start-ups: some hints for public policies. *Journal of Business Venturing* 4: 11-26.
- Dykeman, F. (1992) Home-based businesses: opportunities for rural economic diversification and revitalization, in I.R. Bowler, C.R. Bryant, and M.D. Nellis, eds. *Contemporary Rural Systems in Transition*, vol. 2: *Economy and Society*. Wallingford: CAB International, pp. 279-293.
- Easton, G. (1992) Industrial networks: a review, in B. Axelsson and G. Easton, eds. *Industrial Networks: A New View of Reality*. London: Routledge, pp. 3-27.
- Eisinger, P.K. (1988) *The Rise of the Entrepreneurial State: State and Local Economic Development Policy in the United States*. Madison: University of Wisconsin Press.
- Eskelinen, H. (1993) Rural areas in the high-mobility communications society, in G. Giannopoulos and A. Gillespie, eds. *Transport and Communications Innovation in Europe*. London: Belhaven, pp. 259-283.
- Estimé, M.-F., G. Drilhon, and P.-A. Julien (1993) *Small and Medium-sized Enterprises: Technology and Competitiveness*. Paris: Organisation for Economic Co-operation and Development.
- Everitt, J. and R. Annis (1992) The sustainability of Prairie rural communities, in I.R. Bowler, C.R. Bryant, and M.D. Nellis, eds. *Contemporary Rural Systems in Transition*, vol. 2: *Economy and Society*. Wallingford: CAB International, pp. 213-222.
- Falemo, B. (1989) The firm's external persons: entrepreneurs or network actors? *Entrepreneurship and Regional Development* 1: 167-177.
- Fitchen, J.M. (1991) *Endangered Spaces, Enduring Places*. Boulder: Westview Press.
- Flora, C.B. and J.L. Flora (1993) Entrepreneurial social infrastructure: a necessary ingredient. *Annals of the American Academy of Political and Social Science* 529: 48-58.
- Flora, J.L., G.P. Green, E.A. Gale, F.E. Schmidt, and C.B. Flora (1992) Self-development: a viable rural development option? *Policy Studies Journal* 20: 276-288.
- Flora, J.L., J. Sharp, and C.B. Flora (1997) Entrepreneurial social infrastructure and locally initiated economic development in the nonmetropolitan United States. *Sociological Quarterly* 38: 623-645.
- Florida, R. (1995) Toward the learning region. *Futures* 27 (5): 527-536.
- Fountain, J.E. (1998) Social capital: a key enabler of innovation, in L.M. Branscomb and J.H. Keller, eds. *Investing in Innovation*. Cambridge, MA: MIT Press, pp. 85-111.
- Fukuyama, F. (1995) *Trust: The Social Virtues and the Creation of Prosperity*. New York: Free Press.
- Geertz, C. (1983) *Local Knowledge: Further Essays in Interpretive Anthropology*. New York: Basic Books.
- Gelsing, L. (1992) Innovation and the development of industrial networks. In B.-A. Lundvall, ed. *National Systems of*

- Innovation*. London: Pinter, pp. 116-128.
- Gibb, A.A. (1993) Key factors in the design of policy support for the small and medium enterprise (SME) development process: an overview. *Entrepreneurship and Regional Development* 5: 1-24.
- Granovetter, M. (1985) Economic action and social structure: the problem of embeddedness. *American Journal of Sociology* 91: 481-510.
- Granovetter, M. (1992) Economic institutions as social constructions: a framework for analysis. *Acta Sociologica* 35: 3-11.
- Green, G.P., J.L. Flora, C.B. Flora, and F.E. Schmidt (1993) Community-based economic development projects are small but valuable. *Rural Development Perspectives* 8 (3): 8-15.
- Grotz, R. and B. Braun (1993) Networks, milieux and individual firm strategies: empirical evidence of an innovative SME environment. *Geografiska Annaler* 75B: 149-162.
- Hansen, N. (1992) Competition, trust, and reciprocity in the development of innovative regional milieux. *Papers in Regional Science* 71: 95-105.
- Hansen, N. (1993) Endogenous growth centers: lessons from rural Denmark, in D. Barkley, ed. *Economic Adaptation: Alternatives for Nonmetropolitan Areas*. Boulder: Westview Press, pp. 69-88.
- Harrison, B. (1992) Industrial districts: old wine in new bottles? *Regional Studies* 26: 469-483.
- Harrison, B. (1994) *Lean and Mean*. New York: Basic Books.
- Hatch, C.R. (1988) *Flexible Manufacturing Networks: Cooperation for Competitiveness in a Global Economy*. Washington: Corporation for Enterprise Development.
- Herrigel, G. (1993) Large firms, small firms, and the governance of flexible specialization: the case of Baden Württemberg and socialized risk. In B. Kogut, ed. *Country Competitiveness: Technology and the Organizing of Work*. New York: Oxford University Press, pp. 15-35.
- Hertz, S. (1992) Towards more integrated industrial systems, in B. Axelsson and G. Easton, eds. *Industrial Networks: A New View of Reality*. London: Routledge, pp. 105-128.
- Hite, J. (1997) The Thunen model and the new economic geography as a paradigm for rural development policy. *Review of Agricultural Economics* 19: 230-240.
- Hjalager, A.-M. (1989) Why no entrepreneurs? Life modes, everyday life and unemployment strategies in an underdeveloped region. *Entrepreneurship and Regional Development* 1: 85-97.
- Hobbs, D. (1995) Capacity building: reexamining the role of the rural school, in L.J. Beaulieu and D. Mulkey, eds. *Investing in People: The Human Capital Needs of Rural America*. Boulder: Westview Press, pp. 259-284.
- Huggins, R.. (1996) Technology policy, networks and small firms in Denmark. *Regional Studies* 30 (5): 523-526.
- Humphrey, C.R., R.A. Erickson, and R.E. McCluskey (1989) Industrial development groups, external connections, and job generation in local communities. *Economic Development Quarterly* 3: 32-45.
- Illeris, S. (1992) The Herning-Ikast textile industry: an industrial district in West Jutland. *Entrepreneurship and Regional Development* 4: 73-84.
- Indgaard, M. (1996) Making networks, remaking the city. *Economic Development Quarterly* 10: 172-187.
- Isserman, A.M. (1994) State economic development policy and practice in the United States: a survey article. *International Regional Science Review* 16: 49-100.
- Jarillo, J.C. (1989) Entrepreneurship and growth: the strategic use of external resources. *Journal of Business Venturing* 4: 133-147.
- Johannisson, B. (1990) The Nordic perspective: self-reliant local development in four Scandinavian countries. In W.B. Stöhr, ed. *Global Challenge and Local Response*. London: Mansell, pp. 57-89.
- Johannisson, B. (1993) Designing supportive contexts for emerging enterprises. In C. Karlsson, B. Johannisson, and D. Storey (eds.) *Small Business Dynamics*. London: Routledge, pp. 117-142.
- Johannisson, B., O. Alexanderson, K. Nowicki, and K. Senneseth (1994) Beyond anarchy and organization: entrepreneurs in contextual networks. *Entrepreneurship and Regional Development* 6: 329-356.
- Johannisson, B. and A. Nilsson (1989) Community entrepreneurs: networking for local development. *Entrepreneurship and Regional Development* 1: 3-19.
- Julien, P.-A. (1995) New technologies and technological information in small business. *Journal of Business Venturing* 10: 459-475.
- Kanter, R.M. (1995) *World Class: Thriving Locally in the Global Economy*. New York: Simon & Schuster.
- Knight R.V. (1995) Knowledge-based development: policy and planning implications for cities. *Urban Studies* 32: 225-260.
- Kraybill, D.S. and B.A. Weber (1995) Institutional change and economic development in rural America. *American Journal of*

- Agricultural Economics* 77: 1265-1270.
- Kristensen, P.H. (1994) Spectator communities and entrepreneurial districts. *Entrepreneurship and Regional Development* 6: 177-198.
- Krugman, P. (1995) *Development, Geography, and Economic Theory*. Cambridge, MA: MIT Press.
- Larsson, S. (1993) New dimensions in organizing industrial networks. *International Journal of Technology Management* 8: 39-58.
- Leicht, K.T. and J.C. Jenkins (1994) Three strategies of state economic development: entrepreneurial, industrial recruitment, and deregulation policies in the American states. *Economic Development Quarterly* 8: 256-269.
- Lorenz, E.H. (1992) Trust, community, and cooperation: toward a theory of industrial districts, in M. Storper and A.J. Scott, eds. *Pathways to Industrialization and Regional Development*. London: Routledge, pp. 195-204.
- Lorenzoni, G. and C. Baden-Fuller (1995) Creating a strategic center to manage a web of partners. *California Management Review* 37 (3): 146-163.
- Lyons, B.R. and S. Bailey (1993) Small subcontractors in UK engineering: competitiveness, dependence and problems. *Small Business Economics* 5: 101-109.
- Macdonald, S. and C. Williams (1993) Beyond the boundary: an information perspective on the role of the gatekeeper in the organization. *Journal of Product Innovation Management* 10: 417-427.
- Macdonald, S. and C. Williams (1994) The survival of the gatekeeper. *Research Policy* 23:123-132.
- MacPherson, A. (1992) Innovation, external technical linkages and small-firm commercial performance: an empirical analysis from Western New York. *Entrepreneurship and Regional Development* 4: 165-183.
- Maillat, D. (1995) Territorial dynamic, innovative milieus and regional policy. *Entrepreneurship and Regional Development* 7: 157-165.
- Malecki, E.J. (1994) Entrepreneurship in regional and local development. *International Regional Science Review* 16: 119-153.
- Malecki, E.J. (1997a) *Technology and Economic Development*, second ed. London: Addison Wesley Longman.
- Malecki, E.J. (1997b) Entrepreneurs, networks, and economic development: a review of recent research, in J.A. Katz, ed. *Advances in Entrepreneurship, Firm Emergence and Growth*, vol. 3. Greenwich, CT: JAI Press, pp. 57-118.
- Malecki, E.J. (1998) Telecommunications technology and business location: a review, in J. Schmidt, ed. *Rural Infrastructure as a Cause and Consequence of Rural Economic Development and Quality of Life* (SERA-IEG-16). Mississippi State, MS: Southern Rural Development Center, pp. 107-142.
- Malecki, E.J. and F. Tödtling (1995) The new flexible economy: shaping regional and local institutions for global competition, in C.S. Bertuglia, M.M. Fischer, and G. Preto, eds. *Technological Change, Economic Development and Space*. Berlin: Springer, pp. 276-294.
- Malecki, E.J. and D.M. Tootle (1996) The role of networks in small firm competitiveness. *International Journal of Technology Management* 11: 43-57.
- Malecki, E.J. and D.M. Tootle (1997) Networks of small manufacturers in the USA: creating embeddedness, in M. Taylor and S. Conti, eds. *Interdependent and Uneven Development: Global-Local Perspectives*. Aldershot: Ashgate, pp. 195-221.
- Malecki, E.J. and M.E. Veldhoen (1993) Network activities, information and competitiveness in small firms. *Geografiska Annaler* 75B: 131-147.
- Marchesnay, M. and P.-A. Julien (1990) The small business: as a transaction space. *Entrepreneurship and Regional Development* 2: 267-277.
- Mariti, P. (1990) Constructive cooperation between smaller firms for efficiency, quality and product changes, in D. O'Doherty, ed. *The Cooperation Phenomenon*. London: Graham and Trotman, pp. 31-50.
- Massey, D., P. Quintas, and D. Wield (1992) *High Tech Fantasies*. London: Routledge.
- McDowell, G.R. (1995) Some communities are successful, others are not: toward an institutional framework for understanding the reasons why, in D.W. Sears and J.N. Reid, eds. *Rural Development Strategies*. Chicago: Nelson-Hall, pp. 269-281.
- McGranahan, D.A. (1984) Local growth and the outside contacts of influentials: an alternative test of the "growth machine" hypothesis. *Rural Sociology* 49: 530-540.
- McGranahan, D.A. (1990) Entrepreneurial climate in small towns. *Regional Science Review* 17: 159-169.
- McGuire, M., B. Rubin, R. Agranoff, and C. Richards (1994) Building development capacity in nonmetropolitan communities. *Public Administration Review* 54: 426-433.
- Mønsted, M. (1993) Regional network processes: networks for the service sector or development of entrepreneurs? in C.

- Karlsson, B. Johannisson, and D. Storey, eds. *Small Business Dynamics*. London: Routledge, pp. 204-222.
- Mueller, F. and R. Loveridge (1995) The 'second industrial divide'? The role of the large firm in the Baden-Württemberg model. *Industrial and Corporate Change* 4: 555-582.
- Nelson, R.R. (ed.) (1993) *National Innovation Systems: A Comparative Analysis*. New York: Oxford University Press
- North, D. and D. Smallbone (1996) Small business development in remote rural areas: the example of mature manufacturing firms in northern England. *Journal of Rural Studies* 12: 151-167.
- OECD (1995) *Niche Markets as a Rural Development Strategy*. Paris: Organisation for Economic Co-operation and Development.
- O'Brien, R. (1992) *Global Financial Integration: The End of Geography*. London: Pinter.
- Oksa, J. (1995) Are leaping frogs freezing? Rural peripheries in competition, in H. Eskelinen and F. Snickars, eds. *Competitive European Peripheries*. Berlin: Springer, pp. 183-203.
- Oliver, C. (1996) The institutional embeddedness of economic activity, in J.A.C. Baum and J.E. Dutton, eds. *Advances in Strategic Management*, vol. 13. Greenwich, CT: JAI Press, pp. 163-186.
- Parker, E.B., H.E. Hudson, D.A. Dillman, and A.D. Roscoe (1989) *Rural America in the Information Age: Telecommunications Policy for Rural Development*. Lanham, MD: University Press of America.
- Piore, M. and C. Sabel (1984) *The Second Industrial Divide*. New York: Basic Books.
- Porter, M.E. (1990) *The Competitive Advantage of Nations*. New York: Free Press.
- Portes, A. and J. Sensenbrenner (1993) Embeddedness and immigration: notes on the social determinants of economic action. *American Journal of Sociology* 98: 1320-1350.
- Pulver, G. (1995) Economic forces affecting the future of rural America, in L.J. Beaulieu and D. Mulkey, eds. *Investing in People: The Human Capital Needs of Rural America*. Boulder: Westview Press, pp. 49-63.
- Putnam, R.D. (1993) *Making Democracy Work*. Princeton: Princeton University Press.
- Putnam, R.D. (1994) The prosperous community: social capital and public life. *Firm Connections* 2 (2): 5, 11-12.
- Reese, P.R. and H.E. Aldrich (1995) Entrepreneurial networks and business performance: a panel study of small and medium-sized firms in the Research Triangle, in S. Birley and I.C. MacMillan, eds. *International Entrepreneurship*. London, Routledge: 124-144.
- Robertson, P.L. and R.N. Langlois (1995) Innovation, networks, and vertical integration. *Research Policy* 24: 543-562.
- Rosenfeld, S. (1989-90) Regional development European style. *Issues in Science and Technology* 6 (2): 63-70.
- Rosenfeld, S. (1992) *Competitive Manufacturing: New Strategies for Rural Development*. Piscataway, NJ: Center for Urban Policy Research Press.
- Rosenfeld, S.A. (1996) Does cooperation enhance competitiveness? Assessing the impacts of inter-firm collaboration. *Research Policy* 25: 247-263.
- Rosenfeld S.A. (1997) Bringing business clusters into the mainstream of economic development. *European Planning Studies* 5: 3-23.
- Rothwell, R. and M. Dodgson (1991) External linkages and innovation in small and medium-sized enterprises. *R&D Management* 21: 125-137.
- Rowley, T.D. and S.L. Porterfield (1993) Removing rural development barriers through telecommunications, in L.J. Beaulieu and D. Mulkey, eds. *Investing in People: The Human Capital Needs of Rural America*. Boulder: Westview Press, pp. 247-264.
- Sabel, C.F. (1992) Studied trust: building new forms of co-operation in a volatile economy, in F. Pyke and W. Sengenberger, eds. *Industrial Districts and Local Economic Regeneration*. Geneva: International Institute for Labour Studies, pp. 215-250.
- Sachs, P. (1995) Transforming work: collaboration, learning, and design. *Communications of the ACM* 38 (9): 36-44.
- Sako, M. (1992) *Prices, Quality, and Trust*. Cambridge: Cambridge University Press.
- Saxenian, A. (1994) *Regional Advantage*. Cambridge, MA: Harvard University Press.
- Schwarzeweller, H.K. and A.P. Davidson (1997) Perspectives on regional and enterprise marginality: dairying in Michigan's North Country. *Rural Sociology* 62: 157-179.
- Scott, A.J. (1996) Economic decline and regeneration in a regional manufacturing complex: Southern California's household furniture industry. *Entrepreneurship and Regional Development* 8: 75-98.
- Shaffer, R. (1990) Building economically viable communities: a role for community developers. *Journal of the Community Development Society* 21: 74-87.
- Shapira, P., J.D. Roessner, and R. Barke (1995) New public infrastructure for small firm industrial modernization in the USA.

- Entrepreneurship and Regional Development* 7: 63-84.
- Simmie, J. (ed.) *Innovation, Networks and Learning Regions?* London: Jessica Kingsley.
- Sites, W. (1998) Communitarian theory and community development in the United States. *Community Development Journal* 33: 57-65.
- Smilor, R.W. and H.R. Feeser (1991) Chaos and the entrepreneurial process: patterns and policy implications for technology entrepreneurship. *Journal of Business Venturing* 6: 165-172.
- Smilor R W, Gibson D V, Kozmetsky G (1989) Creating the technopolis: high-technology development in Austin, Texas. *Journal of Business Venturing* 4: 49-67.
- Sommers, P. (1998) Rural networks in the United States: lessons from three experiments. *Economic Development Quarterly* 12: 54-67.
- Sorensen, T. and R. Epps (1996) Leadership and local development: dimensions of leadership in four central Queensland towns. *Journal of Rural Studies* 12: 113-125.
- Spilling, O.R. (1991) Entrepreneurship in a cultural perspective. *Entrepreneurship and Regional Development* 3: 33-48.
- Stearns, T.M., N.M. Carter, P.D. Reynolds, and M.L. Williams (1995) New firm survival: industry, strategy, and location. *Journal of Business Venturing* 10: 23-42.
- Stöhr, W. (1990) Synthesis, in W.B. Stöhr, ed. *Global Challenge and Local Response*. London: Mansell, pp. 1-19.
- Storper, M. (1993) Regional 'worlds' of production: learning and innovation in the technology districts of France, Italy and the USA. *Regional Studies* 27: 433-455.
- Storper M. (1995) Territorial development in the global learning economy: the challenge to developing countries. *Review of International Political Economy* 2: 394-424.
- Storper, M. (1997) *The Regional World*. New York: Guilford.
- Swedberg, R. and M. Granovetter (1992) Introduction, in M. Granovetter and R. Swedberg, eds. *The Sociology of Economic Life*. Boulder: Westview Press, pp. 1-26.
- Sweeney, G.P. (1987) *Entrepreneurs, Innovation, Entrepreneurs and Regional Development*. New York: St Martin's Press.
- Sweeney, G.P. (1996) Learning efficiency, technological change and economic progress. *International Journal of Technology Management* 11: 5-27.
- Vaessen, P. and D. Keeble (1995) Growth-oriented SMEs in unfavourable regional environments. *Regional Studies* 29: 489-505.
- Vaessen, P. and E. Wever (1993) Spatial responsiveness of small firms. *Tijdschrift voor Economische en Sociale Geografie* 84: 119-131.
- Vartiainen, H.J. (1988) Entrepreneurship and local government strategies in Finland: a regional perspective, in J.W. Weiss, ed. *Regional Cultures, Managerial Behavior, and Entrepreneurship*. New York: Quorum Books, pp. 87-98.
- Westhead, P. (1995) New owner-managed businesses in rural and urban areas in Great Britain: a matched pairs comparison. *Regional Studies* 29: 367-380.
- Wilkinson, P. and J. Quarter (1995) A theoretical framework for community-based development. *Economic and Industrial Democracy* 16: 525-551.
- Wolf, S.A. and S.D. Wood (1997) Precision farming: environmental legitimation, commodification of information, and industrial coordination. *Rural Sociology* 62: 180-206.
- Zekeri, A.A., K.P. Wilkinson, and C.R. Humphrey (1994) Past activenss, solidaritym and local development efforts. *Rural Sociology* 59: 216-235.
- Zucker, L.G. (1986) Production of trust: institutional sources of economic structure, 1840-1920, in B.M. Staw and L.L. Cummings, eds. *Research in Organizational Behavior*, Vol. 8. Greenwich, CT: JAI Press, pp. 53-111.
- Zysman, J. (1994) How institutions create historically rooted trajectories of growth. *Industrial and Corporate Change* 3: 243-283.

Table 2

Characteristics of "munificent" and "sparse" environments for entrepreneurs

Characteristics of munificent environments

Strong presence of family businesses and role models
A diversified economy in terms of size of companies and industries represented
A rich infrastructure and the availability of skilled resources
A solid financial community
Presence of government incentives to start a new business

Characteristics of sparse environments

Lack of an entrepreneurial culture and values, networks, special organizations or activities aimed at new companies
Lack of a tradition of entrepreneurship and family businesses in the area
Absence of innovative industries
Weak infrastructures, capital markets, few effective government incentives to start a new business

Source: After Dubini (1989).

Figure 1: Maillat (p. 6)

Figure 2: Chung & Gibbons: soc capital (p. 10)

Figure 3: Doherty

Figure 4: Illeris

Figure 5: Austin

Figure 6: Scott

Table 1: fr Everitt and Annis (p. 4)

Table 2: fr Dubini (p. 7)