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# Networks and Clusters: The Yin and Yang of Rural Development

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## THE ORIGIN OF NETWORKS AS PUBLIC POLICY

Beginning in the mid-1980s, policymakers, particularly in rural areas, realized that they could no longer rely only on attracting large branch plants to sustain their economies. Increasing competition from newly developed and less developed low-wage nations was erasing their cost advantages. The more creative development agencies began to rechannel efforts towards stimulating entrepreneurial activity and strengthening indigenous businesses. Among the many policies discovered and promulgated by various experts and advocates in the late 1980s was interfirm collaboration, i.e., the widespread formation of formal and informal alliances, or networks, among groups of companies for mutual competitive advantage.

The prototypical model of interfirm collaboration for much of the U.S. was the northern Italian region of Emilia-Romagna, described masterfully by Michael Piore and Charles Sabel in their book *The Second Industrial Divide*. The authors attributed much of the ability of that economy to benefit from “flexible specialization” to interfirm cooperation. Small companies, they wrote, were able to focus their investments and skills on a particular stage of production or area of expertise and form alliances or networks with other small companies to meet more complex market demands. Large concentrations of similar companies attract specialized support services and expertise, and infra-

structures for cooperation provide early access to new ideas and innovations, all of which contribute to external economies of scale that can match the internal economies of scale of a larger, vertically integrated corporation.

Inspired by the stories about clusters of globally competitive, locally cooperative, small artisan manufacturers, groups of high-level officials from many parts of the U.S. traveled to Italy to learn about cooperation first hand. These study tours convinced even skeptical members that networks could be tools to grow economies. Thus, the Italian network became a lesson about helping small firms survive in increasingly competitive global economies that was taken to heart and supported by public policy.

The policy levers to convert networks from a practice considered by many to be uniquely linked to northern Italy’s social and business culture into a more universal practice were first formulated in Denmark in 1989. This approach to interfirm cooperation, designed in Denmark with advice from American consultant Richard Hatch, became the U.S. and international standard. With an allocation of \$25 million from the Ministry of Trade and Industry, the scheme consisted mainly of training people, called brokers, to create networks and then offering groups of three or more companies sequentially phased grants for conceptualization, planning, and implementation (Table 1). Eligible network activities included joint marketing, production, problem solving, research and development, and purchasing.

Table 1

## ELEMENTS OF THE EUROPEAN NETWORK PROGRAM

**Network “brokers”:** The Network broker was the key to the program, serving as external facilitator, or systems integrator for network functions. In some instances, the brokers were consultants expecting to earn a living in this role but, in most cases, brokers worked for agencies that already served small and mid-sized enterprises (SMEs). Because the idea of working with groups of firms was uncommon, Denmark designed a broker training and certification program.

**Network multipliers:** These are people intimately familiar with the companies and able to detect and assess opportunities for collaboration that can be passed on to brokers. Sometimes referred to as “scouts,” they include staff of chambers of commerce, trade associations, banks, accounting firms, law offices, trade centers, technical colleges, and technology extension services that serve SMEs.

**Incentives for rural networks:** Denmark offered sequenced incentives to compensate small firms for some of the costs of participating in activities with uncertain returns. The Danish program was based on the U.S. Small Business Innovation Research program, with small 100 percent concept grants (up to \$10,000), larger planning grants (up to \$50,000), and larger still implementation grants (up to \$500,000).

**Information campaigns:** Denmark also distributed information widely through the media, brochures, and newsletters on the potential value of networks and funding opportunities. They used distribution venues ranging from conferences to pubs.

**Institutional hubs:** This was not part of Denmark’s official program but was part of those of most of its imitators. Because the sector centers in Emilia-Romagna were viewed as essential parts of its cooperative structure, many regions used specialized technical institutes, research centers, and councils for network formation and services.

The Danish program was funded only for a period of three years, the length of time that its architects believed would be sufficient to demonstrate the value of networks to Danish companies and to establish a culture of cooperation in Denmark similar to the one that existed in Emilia-Romagna. Denmark’s policy strategy is especially important because it became the prototype for nearly all regions of the world and throughout the U.S.—with varying degrees of success.<sup>1</sup>

International “knock-offs” of the Danish policy product, however, took some liberties in their adaptations. In the U.S., many states were interested

enough in networks to explore their potential for economic development.

### RETROFITTING NETWORKS FOR RURAL DEVELOPMENT

Strategies to develop interfirm collaboration were adopted more quickly in rural areas than in urban areas of the United States for a number of reasons. The leading factor was a critical need for solutions to new problems. Many rural areas, particularly in the South, were faced with the exodus of their branch plants to foreign countries, an underedu-

cated labor force that lacked the skills needed to attract higher technology growth industries, and a lack of global competitiveness among their small and mid-sized enterprises (SMEs). This spurred a search among rural development agencies, community organizations, and other intermediaries for new ideas for economic development to supplement recruitment.

Two other factors also contributed to high levels of interest in networks in rural areas. One was the history of agricultural cooperatives, which made networks more familiar and therefore acceptable. The other factor was the continuing search—particularly since the launching of Johnson’s War on Poverty—for new ways to build sustainable economies in persistently poor areas such as the Mississippi Delta, Appalachia, and Native American lands.

Cooperation was consistent not only with agrarian traditions but with the values of community organizing and collaboration held by many non-profit organizations working in rural areas. Many areas had already reaped the benefits of federal programs to support the building of associative behavior, from the 47,000 registered cooperatives to the many community and economic development organizations funded by the Community Services Administration and other agencies. Community-based nonprofits were especially quick to adopt networks and viewed them as a unique opportunity to add market driven interventions to their more typical supply driven interventions. Food processing, wood products companies, and agricultural businesses were among the first, and often most frequent, applicants for new network programs.

Thus, the concept of collaboration resonated particularly well in rural areas. Among the first places in the U.S. to adopt networks as a formal approach to regional competitiveness, albeit with modest budgets, were western North Carolina (supported by the North Carolina Rural Development Center) and Arkansas (supported by the Winthrop Rockefeller

Foundation and Governor Clinton via funding from the Arkansas Development Finance Authority). These efforts were followed almost immediately by a statewide program in Oregon (funded by the state legislature); five rural initiatives in Minnesota, Washington, and Montana (supported by the Northwest Area Foundation); initiatives in the Upper Peninsula of Michigan and Appalachian region of Ohio (funded by the Joyce and Ford Foundations and others); and a statewide program in Montana. Almost all of these were influenced by network champions who had traveled to Italy in the 1980s, and each relied on the Danish program framework for implementation—but without anywhere near Denmark’s levels of funding, without its strong government endorsement, without any substantial and comparable organized constituency.

Most U.S. government grant programs in fact were miniscule compared to most of the other nations that were turning to networks. Oregon’s total state network program was about \$1.6 million, compared to \$25 million in Denmark or \$10 million in Portugal for similar programs. In the U.S. grants were generally on the order of from \$10,000 per network, which was intended to develop the network structure and goals. The small grants were large enough to attract the interest of businesses but not to support the network brokers who organized the networks, to demonstrate results, or to build a sustainable base of support. Many therefore disintegrated before member firms could realize sufficient value to make their own investments.

Some of the most creative and effective networks were established at the local level by entrepreneurial organizations with good connections to funding agencies. Those in depressed rural areas of the U.S. in particular were able to raise relatively large sums of money from private foundations or federal agencies to demonstrate the impacts of networks on rural communities and people. ACENet’s kitchen and food processing networks in Athens, Ohio, (part of Appalachia) were due to the initiative of an existing

community-based organization that had focused on employee ownership. The wood products networks in Michigan's Upper Peninsula resulted from the efforts of the Northern Economic Initiatives Corporation. Community colleges also played an important role. The catalyst for the Technology Coast Manufacturing and Engineering Network in the panhandle of Florida and Northeast Oklahoma Manufacturers Association was the local community college. In eastern North Carolina, the university helped organize local fiberglass boat builders into a soft network to address environmental and training issues together. In western Massachusetts, a regional plastics association became the Berkshire Plastics Network and made networking its core activity ([www.berkshireplastics.org/contact.asp](http://www.berkshireplastics.org/contact.asp)). Each of these used its entrepreneurial skills to acquire more than a half million dollars in support of networks from a variety of public and private sources and to continue for more than a decade.

The first, and only, national effort to move the numbers of networks in the U.S. to a scale that could have impact began in 1993 under a grant from the National Institute for Standards and Technology to Regional Technology Strategies, Inc. The project, called USNet, was based on the documented value of networks to industrial modernization and technology adoption in Europe and involved 15 state partners working together to build statewide network programs for SMEs. It relied heavily on the Danish model of training brokers and multipliers and on a process for informing companies and development organizations. But it depended on the individual partner states to provide the financial incentives. While not a rural development initiative per se, many of the early adopting areas were rural.

As part of that effort RTS published a bimonthly newsletter (1993-98) about networks called *Firm Connections*. It featured stories of rural networks and, periodically, produced special issues with rural themes. Partner government agencies sponsored con-

ferences and workshops about networks, and national journals, magazines, and newspapers covered network stories. Much of the program's success was dependent on making the potential value and funding opportunities better known to businesses and service providers and on documenting successes. Networks were also features at various agriculture or rural development conferences, such as "Building Industrial Competitiveness in Rural Areas" held at Iowa State University in 1993.

USNet's federal funding ended and an external team evaluated the value of the process, the levels of interest among businesses, and the impacts of networks formed. The evaluators found, among other things (based on 99 company responses from 13 networks), that the typical net benefit to firms was \$10,000, although a much higher average suggests that a few firms reaped most of the benefits. Almost nine in ten of the participating firms expressed satisfaction with their network, and many attributed changes in business attitudes and practices as a result. Eighty-six percent had already realized a positive effect (Welch). The benefits are shown in Table 2.

## UNIQUELY RURAL?

There were two very important distinctions between rural networks in the U.S. and many urban and most non-U.S. networks.

- Rural networks were more likely to be "soft" networks than "hard" networks.
- Rural networks were more likely to be driven by need or crisis than by quick opportunities for profit.

## Soft solutions to hard problems

In the United States networks tended to be larger than those in other countries—especially in the

Table 2  
**BUSINESS IMPACTS ON COMPANIES OF NETWORK**

<u>Outcome</u>	<u>Percent reporting</u>
Improved quality of products	38
New customers	38
New suppliers outside network	32
Increased sales	31
Increased profitability	30
Improved existing process	30
Improved relationships with customers	27
Adopted new technologies	25
Improved supplier quality	24
Savings by group purchasing or shared resources	24
Developed new product	19
Increased exports	7
Established new company	4

Source: Doug Welch, et al., "Net benefits: An Assessment of a set of manufacturing business networks and their impacts on member companies," Carrboro, NC: Regional Technology Strategies, Inc. October 1997.

rural United States. The larger size was a result of differences in purpose and structure. Many of the rural networks were termed "soft networks," to differentiate them from "hard networks," a distinction made by the architect of New Zealand's hard and soft network programs (Williams). Hard networks are relatively small groups of companies that form to achieve specific shared business objectives such as new markets, joint product development, co-production, or co-marketing and are likely to require formal agreements for sharing profits or resources rather than membership fees. The term "flexible manufacturing network" almost always refers to a hard network. Hard networks form with a specific "show me the money" expectation, not simply to

sustain a set of relationships. Therefore, they should be evaluated not in terms of longevity but in terms of business outcomes.

Firms in "soft networks" also expect to make money but not necessarily through joint and usually contractual business ventures. The soft networks have open membership, generally from a single group of related sectors, often have nonprofit tax status, tackle generic issues, and provide some general services. They depend on dues for part of their funding, and thus tend to be quite large. Their goals and structures are similar to the more active and localized trade associations, such as Emilia Romagna's National Confederation of Artisans, or

to its sector hubs that provided specialized support for various sectors such as knitwear, metals, ceramics, or agricultural machinery.

This distinction between soft and hard networks is quite important in the evolution of rural network initiatives and in comparing the U.S. to other nations. Outside of the U.S., most official network programs were restricted to hard networks. In the U.S., however, and particularly in rural areas, soft networks predominated, perhaps because of the need for organizational structures in which firms could associate, acquire information, and find external economies that reduced their costs. They were also easier to form since they require significantly less trust and less investment and thus risk, and programs were expected to show quick results in terms of networks formed and companies engaged. As a result the average size of a U.S. network in the late 1990s, for example, was 30 companies, compared to the average size of an Australian network of four (Dean and Frost). Within the U.S., there were also interstate differences. Oregon, for example, followed the Danish model more closely and network grants were restricted to hard networks.

The difference between hard and soft networks, unfortunately, was often overlooked in official program assessments. Even the official Danish evaluation, which was conducted three years after the program ended, looked for the presence of networks funded five and six years earlier, instead of the increased tendency of SMEs to form networks—the real goal of the program. The objectives set for networks funded by the Northwest Area Foundation in 1992 created similar problems in the evaluation. Four of the five networks funded were soft association-type networks, and focusing on the kinds of outcomes associated with flexible manufacturing networks did not reflect the true value of the networks (Rosenfeld 1996b).

Over time, the soft rural networks have proven to be survivors largely because they required less direct

interfirm collaboration and less trust, had a permanent management structure, and were able to deliver enough value as a result of locational economies and cost savings to justify the members' small investments. More important, because the soft networks were organized around groups of sectors that correspond to what are now called "clusters," they are readily adaptable to the new cluster strategies and look remarkably similar to the cluster councils and organizations being formed.

### A search for economic stability

Although introduced as an economic strategy to exploit economic opportunities, rural networks were frequently responses to real and potential threats or crises or to distinctive needs and limitations of rural communities. The first includes an over-dependence on natural resources, primary industries, branch plants, and microenterprises—all of which pay relatively low wages. The economic collapse of a key industry, shutdown of a major employer, or persistent unemployment or underemployment often serve as the catalysts for taking a chance with a new approach. Networks are formed to reduce a community's susceptibility to changing demand and stagnation and to plan and prepare for change and fight threats collectively. An important catalyst for network programs in Oregon and Washington in the early 1990s was the loss of timberland to save the spotted owl. Networks were viewed as ways to increase value-added manufacturing from the lumber. Appalachian by Design was a response to poverty and unemployment in rural West Virginia.<sup>2</sup>

The second reason, needs and limitations, includes isolation among firms and from the outside world and diseconomies of scale that limit local services, such as education and training programs, technical assistance, and capital. The hosiery companies in western North Carolina ([www.hosetech.com](http://www.hosetech.com))<sup>3</sup> and the Metalworking Connection in Arkansas ([www.metalworkingconnection.com](http://www.metalworkingconnection.com)) both used the

political clout they were able to muster collectively to obtain specialized services from their state legislatures that had been beyond their reach.

One reason for network responses to crises or need may be, of course, the easier access to funding from federal agencies and private foundations. TeCMEN, a network of defense contractors in rural Florida, initially formed to find new markets in anticipation of budget cuts in defense spending ([www.gnt.net/local/tcmen](http://www.gnt.net/local/tcmen)).

The various obstacles and crises, of course, do not apply to all rural areas; there are vast differences between the needs of agricultural Heartland, the industrialized rural South, and the sparsely populated West. But to the extent that size and dispersion of population, the structure of the economy, and access to markets and resources affect economies, needs, and attitudes, there are distinctive commonalities. The following are some of the usual suspects.

**Expanding the social life of rural SMEs.** Rural SMEs—even in relatively industrialized rural areas—are quite isolated from other manufacturers, and they have few venues for associating with peers in order to exchange information, get advice on common problems or investment decisions, learn about different methods of doing business, or forge alliances. This led to early efforts in rural areas to form soft networks that could both function as intermediaries and provide a social infrastructure, giving member firms in rural areas the opportunity to overcome distances and get to know each other well enough to uncover any complementary competencies or production capabilities. These soft networks were organization-based or institution-based. The Tri-State Manufacturers Association in Elbow Lake, Minnesota, for example, initially formed as a network of six companies that wanted a means to meet with companies that had similar interests and problems. Initially, the founders anticipated a maximum membership of about 20 members—which

was the number of metalworking firms they knew of in the vicinity. Today, the association has more than 100 members. In Arkansas, both the Arkansas' Wood Products Network and the Metalworking Connection were organized to provide a forum for members to share information, build trust, and to give them some economies of scale. The hosiery companies in western North Carolina have both an important intermediary and an association, which are themselves interdependent. Their trade association provides the glue that brings them together and the technology center delivers the services.

**Buying more and paying less.** Specialized services invariably are more scarce and usually more expensive in rural areas. Therefore, the second characteristic of rural networks has been an emphasis on matching and combining needs or resources to achieve economies of scale. Aggregating and forcefully articulating businesses' needs and demands provide the strength of numbers necessary to influence public and private sector investments in specialized infrastructure and services and attract new and specialized services from private sources, community colleges, and community-based organizations. Some of the earliest network success stories were cost savings achieved by small firms negotiating collectively—on insurance policies, telephone rates, or joint purchases. But once they captured some savings, they began thinking about real improvements. Networks were integrated very early into the federal programs such as: the Manufacturing Extension Partnership (MEP) as a way to deliver modernization services economically to small rural firms. The U.S. Department of Commerce later blended in its marketing cooperatives, and the U.S. Department of Labor designed a program for regional training alliances. The initial savings on insurance premiums to members of the Metalworking Connection in Arkansas solidified the support that allowed members to then move into other activities. The original hosiery network that spawned industrywide interest was a group of firms joining together to share the cost of a new measur-

ing technology. It led to a series of shared R&D among companies, including new automated boarding equipment and a testing laboratory.

**Moving further upstream.** Rural networks have been more apt to consist of establishments whose products or services are related to the land, natural resources, or tourism. Food processing and wood products companies, wineries, and bed and breakfasts have been early networkers. Of the 41 networks receiving grants in Oregon's network program, ten were in the food processing industries, two in marine activities, and five in wood products or furniture. Rural economies based on primary industries in transition often see most of the profits from their end-use products going to those who take them from commodity to final product to market—the processors, distributors, and retailers. Numerous networks have formed as an opportunity for farmers, loggers, sawmill operators, and fishers operating in rural areas to join forces in order to add value locally to their harvests. Logging regions, for example, have been cutting and shipping logs, not manufactured products and therefore not getting much of the profits. The Wood Products networks in Bemidji, Minnesota, and the WoodNet on the Olympic Peninsula of Washington, and the Dakota Growers Pasta Company in Carrington, North Dakota, were all aimed at adding value to the commodities produced in their respective regions.

**Reaching global markets.** As network programs were getting under way the Internet was still in its infancy. Rural SMEs then had limited access to qualified suppliers, new customers, export opportunities, or potential partners outside of their regions. They lacked the resources and scale to monitor the strengths and weaknesses of their competitors and to keep pace with new technologies, practices, and markets. Networks gave rural businesses the resources they needed to operate in global economies by, for example, sharing costs and management of foreign sales offices, trade show booths, proprietary industry studies, and communications

systems. Even though the Internet now has opened channels to a wealth of information, markets, and people, establishing working relationships still depends on personal bonds, trust, and handshakes. Thus, networks continue to play an important role in expanding connections. The exchange program between a northern Michigan network of wood products firms and a design school in Finland led to education reforms in Michigan that integrated design into the curriculum from kindergarten through postsecondary education. Visits by an association of North Carolina hosiery firms to their competitors and machine builders in Italy in 1997 led to an R&D network, export networks, and closer ties between the companies collectively and their equipment producers. The Northeast Oklahoma Manufacturers Alliance's web site is designed to extend their outreach into new markets.

**Getting smarter.** Studies have found that rural SMEs are less prone than their urban and larger counterparts to adopt modern production technologies and techniques or to invest in training and information. Some of the most successful soft rural networks have set production process improvement as their primary goal. Networks expose SMEs to best (or at least better) practices and help them benchmark their competition, which leads to greater investments in new technologies and in training—often carried out collectively. Nine of 13 networks surveyed in the USNet final evaluation cited information sharing as a primary network objective, and most network members claimed changes in business attitudes and practices as a result of the collaboration (Welch). Networks of firms undertaking ISO 9000 certification, for example, are increasingly common and lead to long-term relationships in related areas.

**Supporting entrepreneurs.** Rural economies are often home to large numbers of microenterprises and artisan firms that represent very small manufacturers, crafts people, farmers seeking supplementary income, laid off workers with no employment

options, spouses of working people, or artists and writers attracted by lifestyle or geography. Most microenterprise owners have little business experience or acumen and choose the scale they do in order to concentrate their efforts on their craft or art. They lack the time for and interest in the tasks that are associated with operating a business, such as book-keeping and taxes, promotion and marketing, and training. In most regions, artisan associations are nonexistent; networks can serve as an alternative that enables the very small producers to collectively purchase common materials or services, contract for business functions, locate new markets, and share technologies and ideas. WoodNet, for instance, in the state of Washington was a network created to take on functions such as accounting, marketing, and purchasing so that its small-scale firms could concentrate on production. Watermark Association of Artisans in North Carolina helps members, who are mostly low-income women, increase their incomes through education and joint marketing.

#### LESSONS LEARNED FROM A DECADE OF NETWORKS

In the early stages of investments in network programs, economic development officials were highly skeptical that companies would talk to one another, much less cooperate. They were convinced that the business owner or manager was much too individualistic to risk sharing even nonproprietary information if it threatened to reduce the firm's competitive advantage. Businesses, however, which are more prone to "deal making" with other companies than officials realized, had different views. They were quite willing to cooperate so long as there was a *quid pro quo*. The experiences (and evaluations) of the past decade in encouraging and assisting companies to ally themselves with other firms in ways that strengthen their collective presence in the economy and thus the local economy have produced valuable lessons.

- **Firms will and do cooperate.** Networks are being accepted by trade and business associations and recognized by the business press, and have become a benchmark for many firms. Rural hosiery companies in North Carolina, for example, regularly enter into co-production and co-marketing compacts, share information, and jointly develop technology. They view networks as a way to strengthen their marketing capacities and give them some leverage when selling to large chain stores.
- **Networks can be accelerated by brokers.** The process of forming networks is an art, not a science. There may be certain legal standards and accounting procedures for business agreements, but getting people together and collectively identifying a common objective is a social skill (Table 3). Firms have different personalities that reflect their owners, industry, and community and require different approaches, and often the community organizing skills people acquired in the 1970s in the U.S. are more effective than technical expertise.
- **Incentive grants are of limited value.** Companies coaxed into networks by a small grant are not those likely to persist after the grant expires. The final evaluation of Oregon's network program found that most of the networks awarded grants failed to meet their goals and were unsustainable (Sommers). Similarly, the evaluation of Denmark's networks three years after the official program ended found little evidence of the original networks that had received government grants.
- **Social capital has been vastly underrated.** Networks cannot flourish without trust, which in turn cannot develop without a social infrastructure that gives members a chance to interact. Brokers are most effective for companies that have some form of pre-existing relationships and know each other. The National Tool-

Table 3  
**ROLES OF NETWORK BROKERS**

<u>Role</u>	<u>Number of networks*</u>
Facilitates meetings	13
Arranges for external resources	13
Arranges for technical or business assistance	10
Arranges plant tours	8
Delivers technical or business assistance	7
Develops new markets	4
Mediates conflicts among members	4

\* Based on responses from 13 networks

Source: Doug Welch, et al., "Net Benefits: An Assessment of a Set of Manufacturing Business Networks and Their Impacts on Member Companies," Carrboro, NC: Regional Technology Strategies, Inc., October 1997.

ing and Machining Association was the driving force in building networks among its members to train skilled workers.

- **Learning is a sufficient outcome for businesses to network.** Most of the early programs were based on the premise that only cooperation aimed directly at hard outcomes had value. But participating companies in the Northwest's five initiatives that were interviewed named learning and benchmarking as their most important reason for joining the network and, at the conclusion, their most important benefit (Rosenfeld 1996b). When small companies that had formed networks in New South Wales, Australia, were asked their "main reasons for joining a network," the most common response was to "share management 'know-how'" (Fulop).
- **Rural networks rarely become self-sufficient.** Most rural networks cannot support them-

selves on membership or service fees and require some continuing support for core activities. ACENet, one of the longest standing "networks," has raised funds from seven government agencies, 11 foundations, and numerous sources to maintain its brokering, convening, and service functions.

- **Networks are not just about profits, they are about improving the quality of lives of people.** Public investments should produce social benefits that extend beyond the bottom line. In theory, improvements in management and steps towards high performance work organization do improve the lot of all workers. But networks do not always lead to better jobs. It is easy to focus attention only on overall business outcomes and not consequences such as increases in salaries and wages, improved quality of work, or career advancements, which ought to be important to a region.

## THE LEGACY OF RURAL NETWORK PROGRAMS

A decade ago government “programs” that supported networks were all the rage around the world. International conferences in Lisbon, Portugal, in 1993, Sydney, Australia, in 1996, and Rotorua, New Zealand, in 1997 drew speakers from dozens of countries. Today only a very few official programs still exist. The main reason for their demise is that they were established on an experimental basis as a limited intervention for a relatively small number of companies and never became a mainstream economic development strategy. They were not viewed as subsidies but as incentives aimed at changing attitudes towards cooperation, and they were intentionally designed for a finite period of time.

Most state network programs have come to a close, and economic development agencies continue to invest most heavily in recruitment. But despite the waning policy interest in network programs around the world, networks are alive and functioning in many rural areas today. They persist largely because the goals of the network initiatives met their original objective of changing attitudes towards association and cooperation.

Current configurations of networks fall into four categories: (a) soft networks that are in essence public or private sector efforts to support clusters, build social capital, and stimulate learning; (b) hard, business-driven networks that are strategic alliances and aspire to growth and profits; (c) specialized service networks that are ways to generate more demand by making services more affordable and accessible; and (d) survivors from the network programs.

### Embedded in cluster initiatives

As network grant programs and funding expired, it became increasingly obvious that the context and environment in which firms form networks is not

peripheral or supplementary to networking but central and essential. Whereas the standard approach to networks was to train brokers and send them out in search of networks, regions discovered that a more effective strategy was to create an environment in which companies would value networks enough to search for brokers or do the brokering themselves.

At about the same time that networks were being promulgated around the globe, some regions were looking at northern Italy and other parts of the world from the perspective of its highly specialized economies, or clusters, not its networks. Michael Porter spurred interest in clusters within regional economies with his highly popular and oft-quoted book, *The Competitive Advantage of Nations*. It challenged the U.S. economic development goal of greater diversification by demonstrating the power of clusters in many nations. States and counties began to look at their economies through the lens of Porter’s diamond model, scanning their economic data to find exceptionally high concentrations of related sectors or potential strengths that might lead to growth.

Even though Porter’s popular diamond model (i.e., factor conditions, home demand, suppliers and services, and firm structure and rivalry) originally emphasized the value of rivalry and minimized the importance of cooperation, network advocates turned to the growing resources for clusters to continue and expand their efforts. Although policies to develop existing or nascent clusters differed from policies to form networks, there was a great deal of overlap. Consultants began to examine economies as interdependent clusters (sometimes no larger than soft networks) of firms that together comprised regional production systems. Over the past decade, virtually every state and large city has conducted some sort of cluster analysis, and many have instituted programs to support clusters (Rosenfeld 1996a; Gollub).

At first glance, clusters appeared to be less applicable in rural areas simply because concentrations of similar and interdependent companies are less obvious to the data-clouded eyes of analysts. National cluster studies, such as the one conducted by DRI/McGraw-Hill for the U.S. Economic Development Administration, found most of their 380 clusters in the nation (based on their four quantitative criteria) in metropolitan areas (1995). But a closer look at rural areas reveals concentrations that may be less dense than Europe's industrial districts but as important in relative employment terms as many large city clusters. Most of the nation's carpets are made around Dalton, Georgia, most of the nation's houseboats are made around Lake Cumberland in the Appalachian part of southern Kentucky, wood crafted products are clustered in Washington's Olympic Peninsula of North Central Minnesota, software forms are clustered in Fairfield, Iowa, and prisons in the North Country of New York.

In fact, rural areas were well positioned to take advantage of the interest in clusters because so many of the rural networks were soft, open membership networks that acted more like—and pre-dated—the increasingly ubiquitous cluster councils being formed than did Denmark's flexible manufacturing networks. The aims of rural networks were quite similar to the aims of cluster strategies. They were to create a social infrastructure and build trust, provide the scale economies to attract specialized services and reduce costs, and encourage members to cooperate. Appalachian by Design in West Virginia, the Technology Coast Manufacturing Network in Niceville, Florida, the Wood Products Network—all of which were described as “networks”—were actually clusters that produced typically private and undocumented networks, which was why evaluations failed to show the anticipated hard results. Table 4 describes some of the distinctions among terms that are all too frequently used interchangeably.

Today, most cluster initiatives recognize the value of and encourage interfirm collaboration, at a scale

beyond the reach of the earlier network programs. The membership-based cluster councils and coaches to facilitate collective activity, which has become the bread and butter tactic of most clusters, and looks suspiciously like the soft network and network brokers. Was the Metal Working Connection, supported with support from then-Governor Bill Clinton, a network or cluster strategy? Is the Tri-State Manufacturers Association a network or a cluster council?

### Embedded in other programs and operating practices

Networks also have been absorbed as the “preferred customer or recipient” within a host of other programs that target specific goals such as overcoming poverty, creating regional skill alliances, providing technical assistance, stimulating entrepreneurship, building social capital development, and developing clusters. In some instances, financial incentives or set asides for multiple firm proposals have been incorporated into these programs.

In northern Vermont, networks represent a jobs program for a poor part of the state, and grants are made to groups of companies that embark on collaborative projects in the areas of agriculture, wood products, or new technologies that are likely to create or retain jobs ([www.vsjf.org](http://www.vsjf.org)). One of the Vermont Sustainable Jobs Fund's operating principles is that “groups of small businesses in Vermont can create wealth more readily than can individual businesses.” They helped organize the Vermont Quality Meats Cooperative, a 46 member co-op to produce, market, sell, and transport meat directly to the restaurants. As a cooperative, it guarantees customers a consistent supply of diverse, fresh quality meats. The Fund also supported a High Technology Business Cluster consisting of two regional development corporations and nine businesses that wanted to improve their chances of doing business in Europe.

Table 4

**CHARACTERISTICS OF NETWORKS AND CLUSTERS**

	<u>Hard networks</u>	<u>Soft networks</u>	<u>Clusters</u>
“Membership”	Closed	Open, membership based	None required
Relationships	Collaborative	Cooperative	Cooperative and competitive
Basis for agreements	Contractual	Majority determination	Social norms and reciprocity
Value added	Allows firm to focus on core competencies	Aggregates & organizes demand for services	External economies
Major outcomes	Increased profits and sales	Shared resources, lower costs, benchmarking	Access to suppliers, services, labor markets
Basis of external economies	Shared functions and resources	Membership	Location/proximity
Shared goals	Business outcomes	Collective vision	None

Training programs—particularly those that target SMEs—also favor networks. The basic concept of regional skills alliances, which were funded by the U.S. Department of Labor last year, was clustered groups of companies joining together to form training alliances. A bipartisan Regional Skills Training Alliances bill was introduced into the Congress in 1998. States and labor unions have also adopted multifirm approaches to training; for instance, Team Pennsylvania’s training programs have required multifirm proposals. The state of Connecticut made “Business Training Networks” a centerpiece of its statewide cluster initiative (Industry Cluster and International Division 2001). Using the same types of financial incentives as in the state’s earlier flexible manufacturing network program, it had awarded grants to eight enterprise training networks by February 2001.

The Appalachian Regional Commission (ARC) uses networks to encourage entrepreneurial activity in distressed counties. A recent evaluation of this federal agency’s entrepreneurial initiative found that two in five grantees stated organizing businesses into networks was a high priority activity. Half the projects evaluated reported directing assistance to networks of firms (RTS).

As nations began to acknowledge the value of learning enterprises, communities, and regions to economic development, they turned to networks and clusters for their mechanisms. Networks as learning communities in fact comes back full circle to successful 1970s Scandinavian network programs called Knowledge Networks. In Norway and Denmark groups of companies would form a network and meet regularly for the purpose of sharing

information and solving common problems. Denmark's requirement for formal joint ventures and hard outcomes was in part a way to distinguish the new program from the previous program. This is not really a change because many of the networks formed in the 1990s were about learning and many even were called continuous improvement user groups, but the new emphasis added new credibility to that goal.

Finally, many intermediaries now operate in the gap between clusters and networks. They bundle the like training needs of customers so that they can deliver services to them collectively as networks, they help them identify other common needs and connect them to services, and they operate as a form of soft network themselves by bringing firms together to disseminate information and, in some instances, even create an association. The Rural Development Center at Somerset Community College in southern Kentucky has a federal grant to organize collective services for the local houseboat manufacturers in the vicinity, which produce the majority of high-end houseboats sold in the U.S. In some rural parts of the U.S., community colleges have assumed network broker roles to organize the demand for and lower the costs of their services. Okaloosa-Walton Community College in Florida, for the defense industry, and the Wood Products Competitiveness Council of Oregon both serve as hubs that encourage and facilitate cooperative business deals among their members.

### Embedded in good business practice

Networks have become the conventional wisdom of business practice as a result of exhortation to cooperate by the business press, business schools, and business leaders. Business schools and books like *The Death of Competition* (Moore), *Cooperative Strategy: Competing Successfully Through Strategic Alliances* (Brandenburg et al.), and *Co-opetition* teach managers to “position their own companies

within interlocking business networks” and to use cooperation strategically. Not limited to academic books, networking and networks are regularly featured in the more popular trade magazines and papers such as the *Wall Street Journal*, *Business Week*, and *Industry Week*, and thus reach a much wider audience. The National Tooling and Machining Association, Berkshire Plastics Network, and the Carolina Hosiery Association are examples of industry-driven support for various forms of networks among rural firms.

### A result of persistence

Many of the networks that are cited repeatedly as best practice in the U.S. and formed in the early stages of network programs have matured into permanent entities. The networks survived partly because of continuing support but more importantly because they produced value to their members. That value was most often not a joint product or new market—which occurred from time to time—but a combination of reduced costs, access to information and ideas, and solutions to common problems.

Rural networks also reinvented themselves to fit new conditions and new goals. For example, many rural network programs began to update their production technologies and enter new markets, but today find overcoming skill shortages and converting to e-business more pressing problems. ACENet, TeCMEN, Appalachian by Design, the Northeast Oklahoma Manufacturers Council, the Tri-State Manufacturers Association, the Berkshire Plastics Network, and the Metalworking Connection ([www.metalworkingconnection.com](http://www.metalworkingconnection.com)) are a few of the rural networks that have not only survived but have grown and multiplied. NEOMC has now become a model for all Oklahoma regions.<sup>4</sup>

## WHAT'S NEXT FOR NETWORKS AS RURAL DEVELOPMENT?

For all of the reasons set out at the beginning of this paper, networks do continue to exist in rural areas. They persist mainly as a result of the efforts by entrepreneurial individuals in both the private and public sectors. But perhaps more important, the soft, associative nature of many rural networks lends itself to the current rising star of economic development agencies—industry clusters. Thus, the optimistic conclusion to draw from the demise of formal network programs—which were always very marginal (in scale) pilot programs—is that they are no longer necessary because interfirm cooperation in fact has become the *modus operandi* of emerging cluster programs, of intermediaries, and of companies. Whether called cluster councils, regional skills alliances, joint ventures, cooperatives, or simply networks, companies are associating more frequently and regularly. Networks will continue to be a force for rural development to the extent they raise the levels of competitiveness of rural employers and regions, and the impetus will come from a variety of sources.

To reiterate, the major source of network development will be part of developing cluster strategies. In both large urban and rural areas, companies that are clustered will need active cooperation to gain the benefits of external economies. Most of the policy levers for cluster development are in some way about economies of scale or collective actions to solve problems or address market failures and, therefore, are quite consistent with past rural network activities.

Many of the networks will result from the actions of the specialized intermediaries that are so essential to strong clusters. These intermediary organizations, which are the gateways to information, knowledge, and services for firms in the cluster, will realize that they must bundle needs in order to efficiently serve SMEs. Thus, they will become the facilitators for networking activities and convenors for collective

activity among companies. Some of the intermediaries will take the form of “cluster hubs,” which are specialized service centers that can offer an integrated and holistic set of services to sets of industries delivered by experienced staffs that understand the industries and speak their language. Modeled initially on the sector hubs in Emilia-Romagna, Italy, these centers serve as storehouses of and observatories for knowledge and relevant information, and as such they foster collaboration and networking among their customers. Staff of intermediaries will be trained to look for ways to group, or network, customers to meet their bundled or similar needs collectively and to reduce their costs.

A second impetus to networks will be social capital. A nearly universal element of all cluster strategies is to form a membership organization in order to create a social infrastructure. The currently popular term for the organization is a cluster council. These councils are in fact remarkably similar to the soft rural networks that formed over the past decade, and many of these are in fact now being studied by federal agencies and foundations as representing “clusters.” These councils, or networks in rural areas, are yet another way to organize and aggregate similar types of demands for services to make them more accessible.

A third impetus for networking will be the community college. Access to a specialized labor is vitally important to firms in clusters—often the most important factor—and in rural areas the community college is the most active, and sometimes only, provider. Regional economic development is already a high priority among colleges’ missions, and the connection to the needs of clustered industries is a natural step. Community colleges have moved quickly toward building training alliances that bring together small companies to meet minimum size requirements for specialized training. If the need is new technologies, the colleges have taken that on as well. As a result of working relationships with local firms, community colleges have proven

to be especially effective social environments for companies. In many places that lack any other mechanism, they have been the social infrastructure and social glue for networking.

A fourth stimulus to networking is the growing policy interest in learning organizations and regions (OECD). Many clusters are discovering that their success is less dependent on the flow of goods and services among members (traded interdependencies such as local supply chains) than it is on the flow of information and innovations (untraded interdependencies such as technological spillover). The soft rural networks that organized to realize “soft externalities,” i.e., help in solving common problems and benchmarking each other, could become the building blocks of such learning regions.

If there is a barrier to developing networks as part of cluster strategies, it is the existing bias in the ways that clusters are designated. The selection of clus-

ters relies heavily on measures of scale and growth and are based on government data. Therefore, the process favors urban and high tech industries. Clusters are increasingly viewed predominantly as an urban opportunity and policy, and rural areas get the residual, which usually means adding a sector that is not growing and is not really clustered by common in rural areas, such as tourism or agriculture. Rural areas will have to work to define their own growth “clusters” not just using industry classifications but look for unusual but smaller scale forms of interdependencies and perhaps use broader sets of commonalities. They will have to convince their governments that their economies also operate as systems, and that they can grow without the urbanization economies of the large cities.

## ENDNOTES

<sup>1</sup> Early adopters of this model included Argentina, Australia, Brazil, Valencia region of Spain, New Zealand, Portugal, and the United Kingdom.

<sup>2</sup> Appalachian by Design (ABD) is a network of home knitters created in 1992 by a community-based organization in West Virginia in response to high unemployment among rural women and few job opportunities. ABD is a loose network of home knitters that finds markets, works with customers such as Esprit and Soleil, schedules and manages production, quality control, and distribution, and provides training. Though headquartered in Lewisburg and statewide, different areas are organized into self-help teams to support each other ([www.abdinc.org](http://www.abdinc.org)).

<sup>3</sup> The Hosiery Technology Center: An R&D network of hosiery companies formed with a grant from the North Carolina Rural Center in 1990 to develop a new measurement technology. Although that venture was unsuccessful, the members and their association appreciated the value of cooperation enough to con-

tinue to cooperate in other areas, including marketing and exporting, training, testing materials, purchasing, and eventually another, more successful R&D endeavor to develop a new form of automation. The collective support of (and lobbying for) a market driven Hosiery Technology Center at Catawba Valley Community College and an active association provide the glue for associative behavior and networking ([www.hosetech.com](http://www.hosetech.com)).

<sup>4</sup> The Northeast Oklahoma Manufacturers Council (NEOMC) in Okmulgee, Oklahoma, was created by the technical branch of the Oklahoma State University, Manufacturing Extension Partnership, and 30 companies in 1993 in response to skill and employment needs of local companies. Its first collective achievement was to establish internship programs and a highly successful summer academy to acquaint youth with high-tech manufacturing as a career path. The network also created a resource matrix to help members secure contract opportunities and is training members to develop e-commerce and e-business capabilities ([www.ocevnet.org/neomc](http://www.ocevnet.org/neomc)).

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