HIGH-PERFORMANCE ECONOMIC DEVELOPMENT

By Richard Florida and Timothy McNulty

Economic development—both in theory and in practice—has reached a crossroads. The use of government subsidies and tax incentives to recruit new plants and facilities is seen as costly and ineffective, as well as being bemoaned from all quarters of the profession. But, despite nearly two decades of experiments to foster regional economic growth through entrepreneurship, university-industry linkages, venture capital, the development of regional industrial clusters, manufacturing modernization and the like, industrial recruitment continues to be a dominant—if not the dominant—economic development strategy. An even more virulent round of smokestack chasing has in fact emerged recently as states rush to outbid one another to attract companies like BMW, Mercedes, and United Airlines' Maintenance Center. And, at the same time, many states are scaling back their new wave economic development initiatives. Flagship programs which virtually defined the new wave, such as the Michigan Modernization Service, have been abandoned; others such as the Ben Franklin Partnership and Ohio's Edison Program have been refocused and dramatically scaled back.

What accounts for this impasse? The answer is strikingly simple. The American economy has changed, and economic development strategy has failed to keep up. In the absence of new strategies that work, states and localities are reverting to old tools and techniques. But, as we will show, these strategies can no longer work, because they are fundamentally out of touch with the recent evolution of the American economy.

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A new economy is upon us. The essence of this new economy is a deep and fundamental shift from physical effort to knowledge and intelligence as the primary source of value, productivity and economic growth. The nature of manufacturing too has changed, as older forms of mass production have given way to new forms of *high-performance manufacturing*. High-performance manufacturing refers to a new model of work and production organization which harnesses the knowledge and intelligence, as well as the physical labor, of all workers across the value chain from the R&D laboratory to the factory floor. Its defining features include the use of self-managing working teams, rotation of workers across tasks, the involvement of workers in continuous improvement schemes, total quality management, investment in training both on and off the job and the continuous upgrading of workers' skills and knowledge, and joint efforts at innovation between end-users and their suppliers. High-performance manufacturing is also characterized by dense clusters or agglomerations of end-users and suppliers, taking the form of integrated hub-spoke industrial systems, such as the Honda production complex in central Ohio. High-performance manufacturing is already transforming the American economy. According to the most recent studies, anywhere from one-third to one-half of American manufacturers are currently engaged in the transition to high-performance manufacturing.

High-performance manufacturing provides the departure point for developing new and more effective economic development strategies, tools and policies. High-performance economic development must move away from the current emphasis on providing direct assistance to individual firms, and toward creating a total economic environment which can support high-performance firms and provide incentives for others to adopt high-performance techniques.

This article documents the key transformations that are occurring and outlines a number of economic strategies, policies and tools for more effectively harnessing the high-performance revolution. To make our ideas and concepts as concrete as possible, we focus on the experience of one region—the Industrial Midwest—which is making the transition from traditional mass production industrial organization to the new model of high-performance manufacturing.

New Strategies for the New Economy

The rise of a new system of high-performance manufacturing is fundamentally transforming economic development as we know it. High-performance manufacturers harness the knowledge and intelligence of all workers from the R&D laboratory to the factory floor through the use of self-managing teams, continuous improvement and quality efforts, and joint efforts at innovation between end-users and their suppliers. According to the most recent reports, anywhere from one-third to one-half of American manufacturers are currently engaged in the transition to high-performance manufacturing. High-performance economic development must move away from the current emphasis on providing direct assistance to individual firms, and toward creating a total economic environment which can support high-performance firms and provide incentives for others to adopt high-performance techniques. This article documents the key transformations that are occurring and outlines a number of economic strategies, policies and tools for more effectively harnessing the high-performance revolution.

We present the key findings of a three-year research project conducted jointly by the Council of Great Lakes Governors, a consortium of the governors of the eight states bordering the Great Lakes, and the Center for Economic Development at Carnegie Mellon University. To illustrate the kind of policy shift that is required, we introduce the concept of the *high-performance zone*. High-performance zones are a mechanism for transforming the total economic environment of a given place so that it can meet the needs of high-performance manufacturers. Such zones provide a mechanism for accelerating the adoption and diffusion of high-performance manufacturing and for improving the overall capabilities of economic regions.

From Rustbelt to Heartland of High-Performance

Once seen as a region of deindustrialization, disinvestment, despair and desolation, the Industrial Midwest provides a powerful lens from which to view the dynamics of the new economy and their potential to inform new economic development strategies and policies.

Just slightly more than a decade ago, the Industrial Midwest appeared headed for total deindustrialization. Its unemployment rate exceeded the national average, reaching 25 percent in some industrial cities. The eight Great Lakes states had the highest rate of business failures and the steepest decline in real income. The region was rocked by plant closings. The consensus among business leaders, policy-makers and academics was that the region would never again be a center for competitive manufacturing—its costs were too high, and its labor climate too adversarial. The manufacturing heartland, it was argued, would be left behind in a broad and fundamental shift to a post-industrial economy of high-technology, finance and services. Yet, by the late 1980s and early 1990s, manufacturers in this region succeeded in reversing their severe deindustrialization and initiated a re-industrialization that not only has caused a surge in manufacturing performance, but has also provided a model for economic renewal of which the rest of the nation should take note.

A few statistics will help to convey the magnitude of the transformation of the former Rustbelt into a New Industrial Heartland of high-performance. After a severe contraction from 1977 to 1987, manufacturing output from this part of the country grew at 7.8 percent from 1987 to 1988, surpassing not only the 7.4 percent rate of the U.S. as a whole, but also the 6.3 percent rate for Japan and the 5.2 percent rate for Germany. From 1980 to 1988, manufacturing productivity in the Industrial Midwest rose by 36 percent, compared to 15 percent for Germany, 32 percent for the U.S., and 52 percent for Japan. Roughly 15 percent of this gain for the region came from 1986 to 1988, a surge that not even the Japanese economy could match.

A Federal Reserve Board study found Midwestern manufacturers to be 20 percent more efficient than their national counterparts. Meanwhile, manufacturing employment has virtually stabilized, after shrinking 15 percent from 1977 to 1982 and continuing to fall until recent years. Despite having only 30 percent of the nation's population, the region accounts for 36 percent of all manufacturing output in the U.S., 60 percent of the steel, 55 percent of its automobiles, and 50 percent of its machine tools. Remarkably, the Industrial Midwest produced more automobiles and steel in 1992 than a decade before, even when counting the General Motors plant closings. Three factors account for these developments.

Trade, Foreign Investment, Corporate Restructuring

First, manufacturers in the Industrial Midwest never became as defense-dependent as those in other parts of the country, winning the region only one-third as much defense business as California and Massachusetts on a per capita basis. In 1991, Michigan, Indiana and Wisconsin ranked 48th, 49th and 50th respectively in federal spending per person. The Industrial Midwest is less defense-dependent than any other, with defense outlays per person of only 60 percent of the national average. The region's $444 per person in defense spending compares to more than $1,200 per capita for California and more than $1,400 for Massachusetts. As a result, manufacturers retained their commercial focus during the 1980s and are better positioned to weather defense cuts.

Second, companies such as Xerox, Motorola and Steelcase responded to mounting global competition by restructuring themselves into better organizations than they were before. These companies invested heavily in new factories and production technology, instituted total quality management programs, and developed powerful partnerships with their supplier, increasing their ability to compete globally and capture new overseas markets for their products.

I/N Tek, a joint venture between Inland Steel and Nippon Steel, just outside South Bend, Indiana, provides a powerful example of this new system of high-performance manufacturing in the most basic of industries—steel. The factory itself is a paean to modern industrial architecture, spanking white, with gleaming concrete floors and colored rails. The machines and production equipment sparkle. Workers, positioned in high-tech, climate-controlled booths, monitor the production process on advanced computerized equipment.

I/N Tek has transformed the process of cold rolling steel into a continuous process that takes less than an hour from start to finish—a tremendous advance over the old way of producing it in separate steps or "batches" that could take as long as 12 days to complete. The key to this transformation was unleashing the collective intelligence of the work force. The company mobilized factory workers, engineers, and R&D scientists to combine the various batch processes. They recently worked together to connect the entire cold rolling process to another high-tech steel finishing process, called electro-galvanizing, which coats steel, for corrosion-resistant automobile body parts. And for those who still believe that such advances can only be made in the absence of a union, most of the workers were transplanted from Inland Steel's sprawling Indiana Harbor steel mill.

High-performance organization is moving beyond just large companies and is rapidly diffusing into the broader manufacturing supplier base as well. Findings from a sur-

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Key Concepts for Navigating the New Economy: A Glossary of Key Terms

- *High-performance manufacturing:* A new system of manufacturing which harnesses the knowledge and intelligence, as well as physical skill and effort of workers. Its key features include: self-managing work teams, rotation of workers across tasks, continuous improvement, total quality management, and closer and more co-dependent relationships between assemblers and suppliers.
- *High-performance zones:* Aim to create a business climate supportive of high-performance manufacturing by giving regions flexibility and the ability to experiment with new approaches to regulation, investment and service delivery. Introduced in the National Competitiveness Act of 1993 (Senate Bill 4).
- *Mass production economy:* The old system of economic organization based upon effective and efficient mobilization of physical labor, specialization of tasks, scientific management, vertical integration, and arm's length supplier relationships.
- *Knowledge-based economy:* The new system of economic organization based upon knowledge, ideas and intelligence as the key sources of value, productivity and economic growth.
- *Globalization:* The sweeping internationalization of all facets of economic activity—markets, production and technology. A key aspect of globalization is the surge in the foreign direct investment activities of transnational firms.
- *The new economy:* Shorthand for the new system of economic organization including the knowledge-based economy, high-performance manufacturing and globalization.
- *Hub-spoke supplier system:* A geographically concentrated industrial complex with a large hub assembly plant at its center surrounded in close proximity by a substantial number of key component suppliers.
- *Region-state:* Geographically defined economic units with coherent internal economies and trading patterns, which are smaller than nation-states while potentially crossing national borders. Region-states, according to Kenichi Ohmae who coined the term, are coming to replace nation-states as the key mechanism for economic and political integration.
- *Learning/Knowledge-creating region:* A region which is based upon the principles of knowledge-creation and learning—the territorial analogue of the learning organization or knowledge-creating firm.

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vey of roughly 2,000 small and medium-sized manufacturers in the Industrial Midwest indicate that a considerable share of these companies—more than half of all survey respondents—are implementing elements of high-performance organization, such as total quality management programs, self-direct work teams, and just-in-time inventory control. Research by MIT's Paul Osterman indicates that roughly one-third of this nation's manufacturing companies are engaged in the transition to high-performance.

Third, policy makers and economic development professionals in the Industrial Midwest ended up embracing foreign trade and welcoming foreign investment, even as they denounced the painful aspects of adjusting to a global economy. In 1991, the region shipped over $100 billion in manufactured goods to more than 80 countries, including $9.4 billion to Japan and $5.6 billion to Germany. The region's rate of increase in manufactured exports is double the national average, leading the *Wall Street Journal* to proclaim that the region played an important role in returning the United States to the position of the world's largest exporter.

International investment, especially that from Japan, has played a key role in rebuilding the region's traditional industries. More than half of all Japanese foreign direct investment in automobiles, steel, tires and rubber is concentrated in four Great Lakes states—Ohio, Indiana, Michigan and Illinois. These Japanese transplants have facilitated the transfer of world-class manufacturing technology and state-of-the-art management practices to American soil. A key competitive advantage lies in the region's ability to attract a growing constellation of the world's best companies.

Bolstered by exports and foreign direct investment, the Industrial Midwest is recreating its industrial base in traditional sectors like steel and automobiles and developing new high-technology sectors as well. The region is home to the world's newest and most advanced steel finishing and automotive assembly technology. It is a center of world-class office furniture production, as companies like Steelcase pave the way to the electronic office of the future. It houses a state-of-the art image-processing complex of Xerox, Eastman Kodak, and Bausch & Lomb. And, it is a budding center of advanced television production anchored by Sony, Matsushita, major European television producers, and American suppliers of the flat glass used in picture tubes.

The place that best exemplifies the turnaround that can be accomplished by embracing the global economy is Battle Creek, Michigan. During the 1970s, Battle Creek was synonymous with deindustrialization, as its manufacturing base of food and cereal producers, agricultural equipment factories and automotive parts producers experienced severe disinvestment and a wave of plant closings. The city responded with a coordinated strategy to rebuild itself, by attracting high-performance companies from around the world. It turned a defunct army base, the old Fort Custer, into a new industrial park and sent trade missions to Europe and Japan. The results have been startling.

Battle Creek is now home to more than a dozen Japanese automotive component parts manufacturers, including the giant Nippondenso. Working alongside Battle Creek Unlimited, Nippondenso and other companies have developed a local training and technology center in the industrial part and are currently working with the local community college to restructure both its curriculum and administration along the lines of total quality management. Battle Creek is now developing new approaches to worker training and vocational education to train workers to meet the needs of the new economy.

This combination of trade, foreign investment, and corporate restructurings has fueled overall economic performance exceeding national averages. The Industrial Midwest has largely been spared in the *bi-coastal recession* of the early 1990s. During the current downturn, 12 of the region's 17 major industries outperformed their national counterparts. The unemployment rate for the Great Lakes states was below that of the nation in 1991. In the first quarter of 1992, over half the nation's housing starts occurred in the Great Lakes region.

In a striking reversal of regional economic fortunes, regions and states like New England, the Sunbelt, New York and even California which led the nation in growth through the mid-1980s remain mired in recession, while once-written off areas such as the Industrial Midwest are going strong. The reason is plain. Economic success goes to those regions which can strengthen their manufacturing bases, move toward quality production, increase productivity and make the transition to high-performance economic organization.

Reinventing Regions for High-Performance

The transformation of the Rustbelt into a New Industrial Heartland reflects a deeper and more fundamental revolution in the nature of capitalism—a shift to a new knowledge intensive economy where the keys to success are harnessing the ideas and innovative capabilities of all workers from the R&D lab to the factory floor to turn out the high-quality, state-of-the-art products the world's consumers want to buy [see Table 1]. The factory itself is becoming more like a laboratory with knowledge workers, advanced high-technology equipment, and clean-room conditions free of dirt and grime. Indeed, capitalism—as management guru, Peter Drucker, and Hitotsubashi University management theorist, Ikujiro Nonaka, point out—is entering into a new age of knowledge-creation and continuous innovation.

This new system of "knowledge-intensive" capitalism is based upon a synthesis of intellectual and physical labor—a melding of innovation and production. The main source of value and economic growth in this new age of capitalism is human intelligence, or what Xerox CEO, Paul Allaire, refers to as the "group social mind." Knowledge-intensive capitalism represents a major advance over previous systems of Taylorist scientific management or the assembly-line system of Henry Ford, where the principal source of value and productivity growth was physical labor.

The shift to high-performance economic organization goes beyond the particular business and management strategies of individual firms. It must involve the development of new inputs and a broader infrastructure at the regional level on which individual firms and production complexes of firms can draw. For most of this century, both regional and national economies grew by extracting natural resources such as coal and iron ore, making materials such as steel and chemicals, and manufacturing durable goods such as autos, appliances and industrial machinery. The United States prospered because it had natural comparative advantages that allowed it to be a mass producer of commodities competing largely on the basis of relatively low production costs.

TABLE 1
The Shape of the New Economy: Key Elements of High-Performance Production

- Customer Emphasis
- Self-Managing Work Teams
- High Employee Motivation
- Just-In-Time Production
- Continuous Innovation
- Co-dependent Customer Supplier Relations
- Organizational Learning
- Constant Training and Employee Development
- Low Employee Turnover
- Rapid New Product Development
- Constant Cycle Time Reduction

In the new economy, regions are becoming more important than ever before. In an important and provocative essay in *Foreign Affairs*, Kenichi Ohmae, the Director of McKinsey's Tokyo office, suggests that regions or what he calls *region-states* are coming to replace the nation state as the centerpiece of economic activity. In his words: "the nation state has become an unnatural, even dysfunctional unit for organizing human activity and managing economic endeavor in a borderless world. ... On the global economic map the lines that now matter are those defining what may be called region states." Region states, Ohmae points out, are fundamentally tied to the global economy through mechanisms such as trade, export, and both inward and outward foreign investment—the most competitive region states are home not only to domestic companies, but are attractive to the best companies from around the world.

To be effective in this increasingly global economy, regions must be defined by the same criteria and elements which comprise a high-performance firm: continuous improvement, new ideas, knowledge-creation and organizational learning. Regions must adopt the principles of knowledge creation and continuous learning; they must in effect become *knowledge-creating or learning regions*. As such, regions must provide a series of related infrastructures which can facilitate the flow of knowledge, ideas and learning.

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Toward a High-Performance Infrastructure

All regions possess a basic set of ingredients that constitute a production system [see Table 2]. They all have a *manufacturing infrastructure*—a network of firms that produce goods and services. Mass production organization was defined by a high degree of vertical integration and internalization of capabilities. External supplies tended to involve ancillary or non-essential elements, were generally purchased largely on price, and stored in huge inventories. High-performance economic organization is characterized by a much higher degree of reliance on outside suppliers and the development of co-dependent complexes of end-users and suppliers. In heavy industries, such as automobile manufacturing, large assembly facilities play the role of hub, surrounding themselves with a spoke network of customers and suppliers in order to harness innovative capabilities of the complex, enhance quality and continuously reduce costs.

Regions have a *human infrastructure*—a labor market from which firms draw "smart" workers. Mass production industrial organization was characterized by a schism between physical and intellectual labor—a large mass of relatively unskilled workers who could perform physical tasks but had little formal involvement in more managerial, technical or intellectual activities, and a relatively small group of managers and executives responsible for planning and technological development. The human infrastructure system of mass production—the system of public schools, vocational training, and college and university professional programs in business and engineering—evolved over time to meet the needs of this mass production system turning out a large mass of cogs-in-the-machine and a smaller technocratic elite of engineers and managers.

The human infrastructure required for a learning region is quite different. As its name implies, a learning region requires a human infrastructure of knowledge workers who can apply their intelligence in production. The education and training system must be a learning system that can facilitate life-long learning and provide the high levels of group-orientation and teaming required for high-performance economic organization.

All regions possess a physical and communications infrastructure upon which organizations deliver their goods and services and communicate with one another. The physical infrastructure of mass production facilitates the flow of raw materials to factory complexes and the movement of goods and services to largely domestic markets. High-performance firms are global players. Thus, the physical infrastructure of the new economy must develop links to and facilitate the movement of people, information, goods and services on a global basis. Furthermore, high-performance organization draws a great portion of its power from the rapid and constant sharing of information and increasingly electronic exchange of key data among customers, end-users and their suppliers. For example, Johnson Control's factory which manufactures seats for Toyota's Kentucky assembly plant receives a computerized order for seats as each new Camry begins its way down the assembly line. A learning region requires a physical and communication infrastructure which facilitates the movement of goods, people and information on a just-in-time basis.

To ensure growth of existing firms and birth of new ones, all regions have a capital allocation system and financial market. One of the existing weaknesses in the U.S. is that financial systems are creating impediments to high-performance. For example, our interviews with executives and surveys of high-performance firms indicate that banks often require inventory to be held as collateral, creating a sizeable barrier to the just-in-time inventory and supply practices which define high-performance economic organization.

And, all regions provide mechanisms for industrial governance—formal modes and informal patterns of behavior between and among firms, and between firms and government organizations. Mass production regions were characterized by top-down relationships, vertical hierarchy, high degrees of functional or task specialization, and command-and-control methods of organizing. Learning regions must develop governance structures which reflect and mimic those of high-performance firms, that is co-dependent relations, network organization, flat or lean organization, and a focus on customer requirements. This goes for government and non-profit organizations, particularly economic development organizations, as well as for private enterprises.

Learning regions provide the crucial inputs required for high-performance economic organizations to flourish: a manufacturing infrastructure of interconnected vendors and suppliers; a human infrastructure that can produce knowledge workers, facilitates the development of a team-orientation, and which is organized around life-long learning; a physical infrastructure which facilitates and supports constant sharing of information, electronic exchange of data and information, just-in-time delivery of goods and services, and integration into the global economy; and a capital allocation and industrial governance system attuned to the needs of high-performance organizations.

TABLE 2
From Mass Production to Learning Regions

	Mass Production Region	Learning/Knowledge-creating Region
Basis of competitiveness	Comparative advantage based upon: • natural resources • physical labor	Sustainable advantage based upon: • knowledge creation • continuous improvement
Production system	Mass production • physical labor as source of value • separation of innovation and production	Knowledge-based production • continuous creation • knowledge as source of value • synthesis of innovation and production
Manufacturing infrastructure	Arm's length supplier relations	Supplier systems as a source of innovation
Human infrastructure	• low skill low cost labor • Taylorist work force • Taylorist education and training	• knowledge workers • continuous improvement of human resources • continuous education and training
Physical and communication infrastructure	Domestically oriented physical infrastructure	Globally oriented physical and communication infrastructure
Industrial governance system	• adversarial relationships • top-down control	• mutually dependent relationships • network organization
Policy system	Specific retail policies	Systems/infrastructure orientation

High-Performance Economic Development

Our existing tool-kit of economic development policies, programs and strategies is ill-equipped to deal with the transformation from old-style mass production to new high-performance and knowledge intensive models of economic organization. Traditional industrial recruitment strategies, for example, were designed to attract the ubiquitous branch plants of mass production industry. Such policies are at best

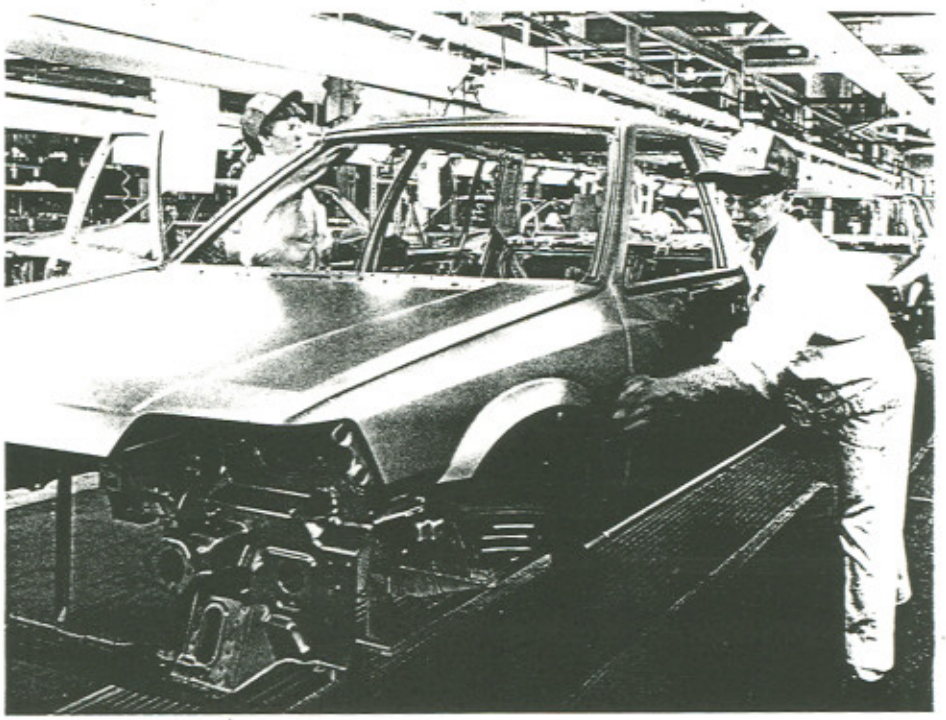
an extremely costly and ineffective way to alter the location decisions of high-performance manufacturers who are pulled toward integrated production complexes.

The so-called second wave strategies of the 1980s are similarly out of touch with the demands of the new economy. Attempts to create the "next Silicon Valleys" throughout the United States and the world have not panned out, and many programs have proven to be costly boondoggles. Moreover, these policies were based upon a misreading of evolutionary trends in the U.S. and world economies. Simply put, the model of small firm networks upon which these programs and policies are based has failed to become a generalizable development model. The model is applicable to only a relatively small number of industries and places, and it has not replaced other forms of economic organization, such as the transnational corporation and hub-spoke networks of high-performance firms, as the primary vehicle of industrial growth and development.

The more recent fascination with manufacturing modernization—including recent federal forays into industrial extension—faces an uphill battle in addressing the central elements of the new economy. Many of these programs tend to focus on technological modernization when organizational change—the adoption of high-performance management strategies—is what is really needed. Furthermore, federal modernization programs simply assume that these companies do not know about advanced technology or manufacturing practice. Another way of saying this is that they presume the problem to be one of inadequate information. But, it is increasingly clear from our own research and that of others, that these firms know exactly where they are deficient. The real problem is that there are factors in the economic environment—demands by their customers, loan policies of banks and so on—which encourage them to continue to do business the way they always have. The real problem then is not information, it is the broader economic environment.

The issue then is how to transform this broader environment—how to create a total economic environment in which high-performance manufacturing can take root and flourish. Indeed, America's regional leaders and economic development professionals confront the same challenges that faced the leaders of the early twentieth century, when education, transportation and regulatory policies were all reshaped to support the economic dynamics unleashed by mass production. In fact, the incredible strength of the U.S. economy in the first half of the twentieth century was based upon a close fit between mass-production industrial organization and government policy. The vitality of the nation's mass production system was bolstered by a broader political economy that supported mass production—everything from roads, rails and ports to the land grant post-secondary education system that grew up alongside and in support of mass production industry.

But, government economic policy—regional economic development policy included—which once worked so well, is out of sync with the demands of the emerging economy of knowledge and continuous innovation. In fact, this entire policy system has become an unwieldy layer-cake of policies and programs—out of touch with the new economy. This entire structure is not only costly and inefficient; it comprises a considerable obstacle to the emergence of the new economy. Regions and states are in effect caught between two economies and two business climates—an old one structured to accommodate the dynamics of mass production, and an emerging high-performance one. Our economic future will not be secured until the transition between business climates is complete. Everything from credit requirements and inflexible environmental permits, to the way teachers receive their credentials must be transformed to meet the demands of the new economy.



Honda's Marysville, Ohio, plant brought teamwork, job rotation and worker-led quality circles to America in the 1980s. Now more than 10,000 American workers are employed at North America's largest automotive assembly plant. Above, teams of workers assemble cars at Honda's Marysville assembly plant. (Credit: Honda of America)

The role of economic development policy must be to develop the regional economic environment which can speed the transition to high-performance economic organization, and, just as importantly, to eliminate any remaining public and regulatory barriers which inhibit its emergence. The lessons from the emergence of a new economy based upon high-performance principles hold two key implications for the industrial and regional development.

Build a Supportive Economic Environment

High-performance manufacturing requires a supportive economic environment and business climate. High-performance manufacturers are currently forced to swim upstream, encountering innumerable obstacles and limitations which stem from the outmoded but still existing mass production business climate. The current mix of economic development strategies and policies are of little help here, because they are essentially products of that same business climate. Most of these programs simply provide subsidies or assistance to firms, but do little to alter the broader economic environment in which they are embedded. For high-performance manufacturing to take root and diffuse throughout the regional and national economies, it will require

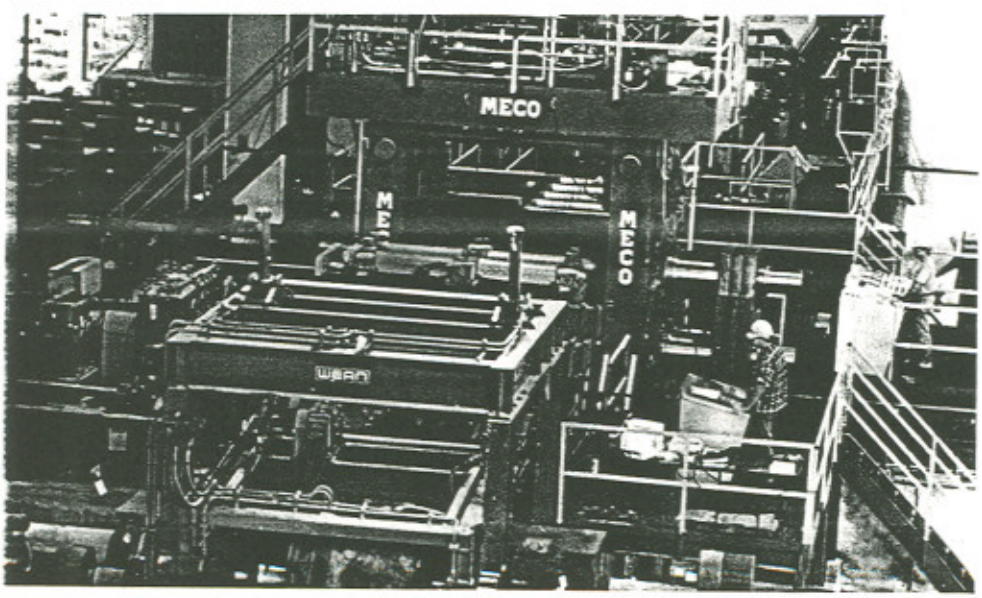
TABLE 3
Key Elements of High-Performance Zones

- Create a broad climate for high-performance
- Organize around high-performance industrial networks (hub companies and suppliers)
- Tailor economic development, education and environment policy to needs of high-performance companies
- Emphasis on regulatory flexibility/regulatory relief. Financial regulatory relief to reduce financing barriers to low inventory companies
- Develop partnerships between high-performance companies and zone schools
- "Just-in-time" delivery of government services

policies which create a more supportive overall economic environment.

The challenge for economic development policy is not to provide specific services, but to create the structure, rules of the game and incentives required for high- performance. In essence, the issue is not to give firms, regions, and communities specific information and assistance, but to provide a new economic framework and set of incentives. Indeed, our research overwhelmingly indicates that high-performance firms do not want direct government intervention in technology development or industrial modernization of the sort provided by manufacturing extension centers.

The evidence we have been able to collect through extensive interviews with high-performance firms and surveys of hundreds of small and medium-sized manufacturers makes one thing abundantly clear: Companies absolutely do not want government advice on how to run their businesses or organize their factories. Moreover, direct technical assistance to firms is only likely to be effective when it occurs within the context of a supportive economic environment. For example, attempts to stimulate the adoption and diffusion of pollution prevention technology will be far more effective if they are linked to broader measures and incentives to improve productivity and reorganize the work process along high-performance lines. At bottom, high-performance organization depends upon a fundamentally different support structure of regulation, investments and incentives than mass production.



World class processing. A high-performance steel facility in Pittsburgh. (Credit: Pittsburgh High-Technology Council)

Harness the High-Performance Revolution

The high-performance revolution can be harnessed for regional development. Unlike the last two decades, when the decline of mass production encouraged dispersion, high-performance organization creates powerful centrifugal forces. This dynamic is reflected in a changing industrial landscape. The mass production economy was marked by large scale production facilities served by a large number of scattered and unrelated suppliers, for example, the global factory and the world car strategy. Conversely, high-performance production is marked by dense corporate complexes of end-users and key suppliers. Hence, while mass production facilities became increasingly free of locational constraints, high-performance production complexes are more firmly rooted in specific places. No production trend in recent times has offered as great an opportunity to establish an industrial stake in regional development.

Once in place, high-performance complexes exhibit a bias toward investment and improvement of the surrounding supplier base and economic area. The improved competitiveness of existing businesses and investment in advanced services and programs enhances the creation of the cluster of suppliers so critical to the effectiveness of high- performance economic organization. In Battle Creek, Michigan, Nippondenso was a leading force in the restructuring of community college programs and the creation of advanced industrial services to support its supplier base. In an inner city neighborhood of Columbus, Ohio, the LSE corporation has established a state-of-the-art steel facility based on high-performance principles. And, Motorola has invested in transforming the entire educational program of the five school districts serving its major production facilities. The high-performance revolution holds out the promise not only to improve the performance of U.S. firms and regions, but to create incentives for regional redevelopment by stimulating private investment in regional firms, workers and community institutions.

High-Performance Zones: A Vehicle for Economic Transformation

High-performance zones provide a powerful vehicle for leveraging the economic transformation underway—one of which is of immediate relevance to economic development policy-makers and planners. These zones seek to create the broad economic environment required for high-performance production to flourish. Their underlying motivation is to give communities and regions a vehicle for establishing the flexibility required to create a new business climate.

High-performance zones aim to give regions the flexibility they need to create high-performance business climates. The zones are similar to enterprise zones or free trade zones because they would create special areas outside the existing maze of federal rules and regulations. But, they differ from enterprise zones in an important respect. Enter-

prise zones want to make U.S. urban areas competitive with the Third World by lowering wages or eliminating environmental restrictions. The U.S. will never be competitive with countries like Mexico or China which pay anywhere from a dollar to a penny an hour for unskilled labor. High-performance zones, in contrast, focus on building American strength in high value-added, high-wage, high performance sectors of the economy. These zones would enable regions to experiment with regulatory and service delivery strategies to facilitate the transition to a high-performance economy, particularly by removing federal, state or local policies, programs and regulations which impede high-performance. They would create incentives for team-based efforts, partnerships and collective action on the part of various levels and agencies of government.

The high-performance zone concept was originally introduced by the Senate for consideration in its version of the National Competitiveness Act of 1993. While this act may never see the light of day for many good reasons, the high-performance zone concept can be advanced through other venues or on its own separate bill.

High-performance zones would revolve around three central principles. First, they would be structured to reflect the natural geographic dimensions of a high-performance production complex. Hence, each zone should consist of at least one potential hub company and portions of its supplier base. Such complexes offer a powerful force for the diffusion of high-performance principles.

Second, the zones would link direct service provision such as manufacturing assistance to the development of a new economic environment which is supportive of high-performance manufacturing. High-performance zones would thus be vehicles for partnerships among businesses and economic development and other service providers, state and local governments, community development organizations, educational institutions, utilities, banks, and high-performance companies. The objective is to create a coalition which can effectively blend direct assistance to firms, workers, and communities with broader strategies for changing the overall business climate.

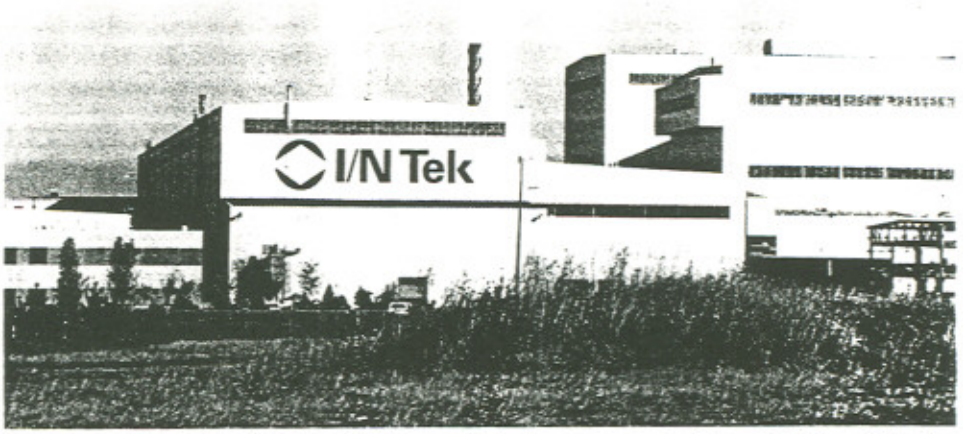
Third and perhaps most importantly, high-performance zones would allow for regional flexibility, experimentation and learning. Each zone should be flexibly tailored to meet the needs and characteristics of the industrial and regional base. This flexibility might take the form of regulatory flexibility, exemptions from federal environmental restrictions, and other elements needed to create a broad economic environment conducive to the rapid adoption and diffusion of high-performance principles (see Table 3). The precise mix of policies in the zone would thus emerge over time and reflect the ongoing process of building and extending the zone partnerships—identifying specific barriers and opportunities for accomplishing this broad economic transformation of the industrial base and the communities in which it is embedded.

Building the Future

For most of the past two decades, experts predicted a shift from manufacturing to a post-industrial service economy, or from basic industries to high technology. In the wake of the predictions, efforts were undertaken to invest in new critical technologies and industries. But, the change underway in the United States and world is not one of old sectors giving way to new, but a more fundamental change in the way goods are produced and the economy itself is organized—from a mass production to a new knowledge-based economy. This change holds sweeping implications for government. The critical need for government economic development policy is not to help invest in new technologies, but to help put in place the economic infrastructure required for the new economy to flourish. The challenge is to redesign the broad infrastructure of government economic policy and the incentive system it helps to set in place in ways that can facilitate—not impede—the shift from mass production to high-performance economic organization.

The emergence of high-performance economic organization offers a unique opportunity to establish a unified framework for industrial and regional revitalization. This opportunity rests in the critical dependence of high-performance economic organization on a new type of policy system and related regional infrastructure. Our findings and those of others have documented the emergence of high-performance economic organization in and around the Industrial Midwest. And, our surveys and interviews with high-performance companies in the Midwest and throughout the United States clearly indicate that existing retail approaches to economic development policy are out of sync with their needs. This work suggests the need to move to infrastructure approaches which can provide a broad climate in which high-performance economic organization can take root and flourish.

Given all of this, economic development policy must be reoriented to speed the development of a business climate and overall economic environment which enables workers, firms and communities to make the transition to the new economy. Economic development policy-makers and professionals must help put in place the incentive structure and regional infrastructure. Long run economic growth and development fundamentally depends upon it.



Located just outside South Bend, Indiana, I/N Tek is one of only two continuous steel rolling mills in the world. Inside, workers engage in continuous improvement and other facets of high-performance production. (Credit: Richard Florida)

The authors developed the concept and legislative language for high-performance zones for the Senate. This article is based on a three-year project to develop high-performance development strategies for the Industrial Midwest sponsored by the Council of Great Lakes Governors and funded by the Joyce Foundation. Special thanks are due Joel Getzandanner, Sheila Leahy, Robert Gleeson, Joyce Nathalie Davis-Florida, David Lashar, Donald Smith, Council Staff, and the more than 30 Heinz School students who participated in aspects of this project. Further information is contained in the following reports:

North America's High-Performance Heartland (Chicago: Council of Great Lakes Governors, May 1994)

Rebuilding America: Lessons from the Industrial Heartland (Center for Economic Development, Carnegie Mellon University, December 1992)

Reinventing the Heartland: A High-Performance Strategy for the Great Lakes Region (Center for Economic Development, Carnegie Mellon University, May 1993)

A Globalization Strategy for the Great Lakes (Center for Economic Development, Carnegie Mellon University, May 1994).