

An Alternative to Regional Economic Incentives: A Midwestern Regional Technology Network

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As trade barriers come down with the implementation of the General Agreement on Tariffs and Trade, it becomes clear that the region that develops its technology and knowledge base will have marketable products around the world. The futurists agree that America can compete with low-cost foreign labor by maintaining its superiority in research and developing its knowledge-based industries.

With the nation calling for downsizing of the massive federal bureaucracy and decentralization of federally managed programs, neighboring states must work together to establish a more productive coordination of resource management. In the Midwest, a powerhouse of industry and technology with fine universities and research facilities, the cutback in defense acquisition has significantly eroded funding for the basic research necessary for new product development. Now the challenge is to enhance private-sector research and product development by better utilizing collective regional resources. Various federal laboratories and defense facilities throughout the Midwest offer a variety of research and technologies sup-

porting a broad spectrum of industrial and businessperson usage.

A midwestern technology network, systematically making these technologies available to midwestern industries, would develop the synergism among industries, universities, and research centers of the region, thereby developing new products, processes, and systems for world trade. Such cooperative action enlarges the regional economic pie, thereby mitigating the perceived need to make deep incentive concessions, sometimes for very ordinary jobs.

Wright Patterson Air Force Base (WPAFB) near Dayton, Ohio, is undoubtedly the largest and most comprehensive defense research facility in the region. It is headquarters for the Air Force Materiel Command and the Aeronautical Systems Division, which together manage the design, acquisition, and maintenance of Air Force hardware. In addition, it houses the Air Force Institute of Technology, the Armstrong Medical Labs, the Foreign Technology Division, and other agencies, including an Air Force Super Laboratory—a combination of five former laboratories. The base is scheduled to

receive a new generation super computer that could be utilized by such a network. In short, WPAFB is a midwestern gold mine of research and technology eminently exploitable in accordance with national policy.

Two requirements need to be met to support this facility and utilize its resources properly:

1. Development of a more effective technology outreach to commercialize WPAFB's technology.

2. Development of regional academic support for the advanced-degree training needs of WPAFB over a broad spectrum of disciplines. With budget and staff cutbacks, it is increasingly difficult for the base to send staff around the country for advanced-degree training and education upgrading; therefore, keeping this facility functioning in the region and available to midwestern industry will require the involvement of world-class academics.

WPAFB has had research contracts with universities and corporations all across the country and has sent its advanced-degree candidates around the country for training. *Local* advanced-degree training would be highly cost effective for the base. The question is, how is it possible to generate world-class Ph.D. instruction at Wright Patterson that will adequately serve the needs of the vast scientific program that exists there? There is a way, but we must change our parochial thinking to give substance to the trite phrase *competing globally*. We must join together with surrounding states to bring the best of their academics together with the best of Ohio's academics to serve Wright Patterson so it will remain a superb research center and to

rationalize its growth as other defense facilities are closed.

This regional strategy, which is happening around the world, will facilitate an academic center of singular world-class excellence that will be a magnet for training scientists for midwestern industries, utilizing the distinctive labs and shops of Wright Patterson. Wright Patterson and its research programs will drive the project.

Another mission of Wright Patterson pursuant to federal policy is to commercialize its technology into private-sector products, processes, systems, and jobs. Here again is a unique opportunity for Ohio, thinking globally, to be the catalyst in joining with industries in neighboring states to utilize the Wright Patterson technology. This union not only facilitates the networking of related industries, but also the networking of industries with universities. Such networking creates a critical mass in related technical capabilities for the synergism of a Silicon Valley, and the benefiting industries develop a political constituency to support a cost-effective and innovative defense research and development program.

The enhanced manufacturing, educational, and technical capabilities resulting from such regional networking offer a positive alternative to the mutually damaging tax-abatement competition now escalating among midwestern states. These states should be networking as a region to build superior products for world trade.

With the collapse of the Soviet Union, taxpayer and congressional incentives for large investments in defense research are diminished. The lessons of the Cold War

and the Persian Gulf War clearly demonstrate the need for the world's new policeman to maintain a technological edge to minimize confrontation and, when engaged, to minimize American casualties. It is, therefore, important in times of economic retrenchment that we not go too far in dismantling our defense research and production capabilities.

Maintaining a strong, private-sector production economy in America is equally important to boost the weakened economy that has resulted from defense cutbacks. This phenomenon has stimulated the federal policy of the Technology Reinvestment Plan, otherwise known as Defense Conversion. This effort facilitates the shift of technical and productive capacities from defense suppliers to commercial interests by developing new private-sector products and jobs, utilizing both the advanced technologies and the newly available scientists and technicians.

The aerospace technologies, as characterized by the Wright Patterson facility, represent our highest opportunity for development and expansion of high-paying jobs and high value-added products. Aerospace technologies are not to be considered unique to the aerospace industry, but of broad application and utility throughout business and industry. Virtually every technology important to manufacturing and industry is represented by expertise at Wright Patterson and midwestern defense labs.

The Japanese have recognized the aerospace industry as super attractive and have subsidized their industries, catalyzing and financing consortia of industries to facilitate the Japanese incursion into the aerospace industry. Such

government support, and the benefits of related industries working together in consortia, effectively minimizes the risks of such new ventures for the participating companies, enhances the opportunities for success, and shortens the start-up time. The European countries similarly utilized consortia of countries and industries to formulate and buy their way into the aircraft industry, with the Air Bus, considered a factor in the demise of U.S. aircraft manufacturers, now approaching 40 percent of the global market. It is clear the world is resorting to consortia and regionalism as ways to compete. Further evidence of this trend is demonstrated by small manufacturers in Denmark, Italy, and Germany joining together in networks to better manufacture and market their products in international trade.

A similar phenomenon exists in higher education. Two developments in modern technology and manufacturing indicate that training in a single discipline is no longer enough:

1. Products are increasingly made up of systems that involve numerous scientific disciplines in various components of the ultimate product.

2. Projects or processes may merge seemingly dissimilar disciplines, e.g., manufacturing that uses a biological process or a medical operation or diagnostic process that utilizes an aerospace instrumentality.

I note an Ohio manufacturer that sought multidisciplinary-trained engineers from a European university complex. This interface of traditional engineering and such disciplines as biotechnology and physiology suggests that a consortium of universities with diverse

academic specialties would be highly productive.

I postulate that

1. It is in the national interest to maintain and support the diversity of WPAFB scientists who work together to develop and enhance defense technologies and systems development.

2. It is in the best interest of the country to facilitate the commercial use of Wright Patterson's technology by using the federal labs' research for commercial products and processes, thereby producing the high value-added products and jobs of the future for a global economy.

To facilitate the above, two things must happen:

1. We must develop a broad-based, world-class academic support system to provide advanced-degree instruction in a broad spectrum of disciplines at Wright Patterson. Such a system should utilize the world-class labs for graduate student training for private industry, thereby facilitating the transfer of Wright Patterson's technology to private industry through the individuals trained there. Such a system assures the future quality and availability of scientists for Wright Patterson but also vitally upgrades the capacity of the participating universities. Because of the opportunities for specialization and capacity enhancement, the universities would be in a better position to qualify for research contracts. The benefits from a consortium of universities offering greater diversity and a higher quality of research will rationalize the current and future Air Force investments at Wright Patterson.

The synergism developed among the various disciplines in the universities will upgrade the capacity of each and gener-

ate greater cost/benefit ratios in educational investments. The Midwest can move forward as a region by targeting and developing world-class university support in each of the Wright Patterson technologies. Clearly Ohio cannot accomplish this alone. Therefore, forming a consortium of the universities in our surrounding midwestern states, bringing the best of their academics to Wright Patterson, and in return offering them enhanced opportunities to benefit from the Wright Patterson research facilities and research opportunities makes sense.


2. We must develop and support a Wright Patterson outreach program to midwest industry. The new and secondary mission of Wright Patterson is to commercialize its technology into private-sector products and jobs. A multi-state nonprofit "Wright Technology Network" would be a group highly skilled in business, technology, and industry. This group would be acquainted with super lab personnel, Air Force Institute of Technology personnel, and Air Force program managers, who would be the interface between midwestern industry and the resources of Wright Patterson and the entire Federal Lab Consortium.

Five years ago, the Ohio operating budget contained a modest and obscure line item to facilitate two universities' participation in the Air Force Artificial Intelligence Center. Five years later, seven universities are involved with research contracts serving the Air Force in a critical technology and building their capacities to apply this critical technology to private-sector applications. A consortium approach would link the universities doing basic research in artificial intelligence with those Ohio universities developing

the applied projects; this linkage would benefit all involved and provide enhanced service to the defense establishment. Such relationships should be developed in numerous technologies, joining the strengths of the best universities for the benefit of national defense technology development. The result would also greatly enrich our universities and industries.

The Silicon Valley success stories around the world have a common denominator of a focused university support system and a critical mass of competing private industries that generates highly skilled personnel in related disciplines. It works! I have observed this happening around the world. Denmark, a country generally without natural resources, credits a measure of its economic recovery to the successful networking among its small and medium-sized manufacturers. In recent years, Denmark has had a positive trade balance with both Germany and Japan. Horizontal networking among natural competitors and vertical networking among natural competitors and cooperative companies contribute complementary services to the process.

Both types of networking have been fruitful. Efforts to market internationally, along with lifetime educational policies and enlightened union leadership, have helped Denmark attain a robust economy. While the American economic culture is different, sufficient American success stories warrant the careful consideration of networking strategies by state and local governments in their economic development programs.

Such strategies to enlarge the economic pie are clearly positive alternatives to the tax abatement, gifts, grants, and loans war, which continue to escalate among the states and between local communities. 

Senator Charles F. Horn is serving his ninth year in the Ohio Senate. He chairs the Economic Development, Technology, and Aerospace Committee. He also represents the Senate on the Thomas Edison Technology Advisory Board, the Development Financing Policy Board, and the Ohio Industrial Training Program Board. He holds a B.S.E.E. from Purdue University and a J.D. degree from Cleveland State University. He is a member of Eta Kappa Nu and Tau Beta Pi engineering fraternities. He is senior member of the law firm of Horn, Coen, and Rife.