

Erosion of the U.S. Industrial Base: An Issue of National Security

Presentation to:

Diminishing Manufacturing Sources and
Material Shortages Convention 2003

By:

Sheila R. Ronis, Ph.D.
President
The University Group, Inc.
Birmingham, MI 48009

August 20, 2003

Erosion of the U.S. Industrial Base: An Issue of National Security

By:

Sheila R. Ronis, Ph.D.

The University Group, Inc.

With the current situation in Iraq and Afghanistan, and the war on terrorism, the United States is facing many challenges. Some of those are obvious, such as maintaining and supplying our troops in the field, and maintaining our homeland security. But, some of our country's challenges are not so obvious. One is the erosion of the U.S. industrial base and its national security implications.

The U.S. industrial base is eroding daily and this situation has enormous national security implications. The nation is facing a time when we are so dependent on foreign countries for critical components and systems, we may have lost our ability to engineer, manufacture or manage the engineering and manufacturing processes. As OEMs around the country, both for the military and U.S. industrial corporations, outsource more and more of their engineering and manufacturing, our ability to control supply chains is disappearing.

It is not difficult to think about potential scenarios where a country, such as China, India, Russia, France or Germany are controlling our ability to make and use the necessary tools for war. It is already happening. There is even the possibility of any one of these countries telling its local company that they *may not* sell a critical component to the United States, deliberately holding us hostage, because they do not agree with our foreign policy decisions. This is a national security issue.

The federal government, and in particular, the Department of Defense, does not manage the country or its industrial base as a "system." U.S. government agencies are fiefdoms that rarely compare notes to see how their collective policies might affect a company or an industry. They need to. Interagency cooperation is an essential element of what needs to change in the future. In addition, other forms of cooperation between the government and industry are necessary. This is critical for all industry...not just that portion of the industrial base that supports the military, directly, but they are

all related. In the recently published, *Transforming the Defense Industrial Base: A Roadmap*, it is recommended that Department of Defense consider,

- “Viewing the industrial base as being composed of operational effects-based sectors that support transformational warfighting.
- Organizing its decision processes to optimize operational effects – not programs, platforms, or weapons systems.
- Evaluating technological and industrial capabilities and concerns within these sectors, including the investment and competitive issues necessary for informed, effective decision-making.”

This report may contain a visioning approach to the future, but it needs to go further. It implies that the strength of the U.S. industrial base will be healthy if these recommendations become the new way of managing the Department. There is nothing wrong with these ideas – they may be necessary. But, they are insufficient, because the complexity of making each one reality does not take into consideration the entire systems that compose each piece, nor how those systems interact with one another.

Cooperation between government and industry is essential because there are elements of the U.S. industrial base that are disintegrating, and are putting the national security of the United States at risk. Unless we look at the industrial base as a system, we do not even see the problem or the possible military implications. We also are not even asking whether or not a U.S. “owned” industrial base matters, and we must explore this issue as a Department, and as a nation.

U.S. corporations increasingly act as large social systems with a global focus. But, if we were to ask the CEOs of the Fortune 500 to describe the issues that are on their minds on any given day, “national security” or the disintegration of the U.S. industrial base would *not* be among them. Many global corporations do not believe that they owe allegiance to any stakeholder except their stockholders, and sometimes, their customers.

This attitude has not changed since the end of the Cold War -- not even since 9/11. This has an immeasurable impact on the national security of the United States. In the post Cold War environment, economic security is national security and military security, but the national security community does very little about it. A new vision of national security is needed that

includes cooperation between government and industry and that examines what the required relationships are that keep our military capability ready. This includes an extensive understanding of special “knowledge or know-how” in areas such as manufacturing.

National security requires a healthy market-based economy, with a strong industrial base of globally competitive industries that continuously improve their quality and productivity. A strong economy produces jobs and powers the nation’s war machines and military capabilities that require unique knowledge.

The United States industrial base is at risk. We cannot sustain the kind of growth that America has enjoyed for the last several decades if we continue to permit a steady erosion of the industrial base of the nation. Increasingly, a number of U.S. companies in specific industries find it impossible to compete in world markets. In addition to the economic risks, we are failing our industrial base that directly supplies our military capabilities.

The national industrial base provides more than jobs. It ensures confidence in the hearts and minds of the public that their nation can maintain the knowledge that creates war machines when necessary. Sometimes, those war machines are not available elsewhere during crisis situations. Permanently losing these “knowledge” capabilities, that are almost impossible to replace, puts the security of the nation at risk.

Globalization and the intense pressure applied by Wall Street to U.S. companies encourages indiscriminant cost cutting, a measure that frequently works in the short term but often creates losses in the long term. The “better, faster, cheaper” mentality sometimes sacrifices long term gains by forcing a company to outsource work to low wage countries in the near term. These decisions can come back to haunt a company at a later date. This is especially the case when the work acquired is of inferior quality, or the accessibility of an essential item can be put in jeopardy. The national security implications of this are profound, not only because such decisions can put a company in jeopardy in the long term, but also because of the loss of jobs for Americans.

In many cases, the United States is unable to manufacture the equipment and technology used to fight and win the nation’s wars. This situation is

not officially documented and monitored to ensure strength at the core of the industrial base, and it needs to be. Globalization “uber alles” in this case, is not viable public policy, especially where National Security is concerned.

Imagine a scenario where the United States is at war and critical electronic components for our planes that support our supply lines are being sent from China. What would happen if our enemies torpedo the shipments? How long could we provide support to our warfighters if enemies target our supply lines due to our dependence on foreign supply sources? What if China decided not to support a company's shipment because they didn't agree with our foreign policy? They would probably be subtle about it. But, can we afford to be potentially blackmailed by another company?

As a nation, we do not have control over foreign shipping. ***Enemies of the United States can easily disrupt our economy and our military just by sinking the ships that feed our industrial base and consumer culture.*** We are more and more vulnerable because of our dependence on foreign parts, services and fuel to maintain our economic growth...not to mention our military capability. This creates problems with accessibility, sustainability and surge capacity. In the post-9-11 environment, we can no longer assume that we can get essential parts and services from abroad whenever we need them.

Global purchasing organizations in industry and the military are not sufficiently looking at the risks of potential disruption of supply lines for a variety of scenarios. Buying something made in Thailand, for example, because it is less expensive does not automatically make it the correct purchasing decision. Thailand can sometimes be very unstable. Not being able to get something essential because of political instability is just as bad as having something attacked by an enemy. Political risks are not always calculated by purchasing organizations. They tend to be rewarded for getting commodities less expensively, and nothing else. Political and economic risk assessments, country by country, are crucial as we dissect our supply chains for weapon systems.

In a global economy, the rules of engagement are different. They can hurt as easily as help. Just look at the results of the brief Longshoremen's strike last year on the West Coast of the country and how much money that brief

disruption cost the nation. It was billions of dollars a day! So, we don't even need terrorists to remind us of our vulnerabilities...

DMSMS

There is a program within the Pentagon, in which all the Services participate that monitors spare part shortages regardless of cause. It is called the Diminishing Manufacturing Sources and Material Shortages (DMSMS) program. Annually, they have a conference and talk about the many issues and risks associated with this problem.

According to DMSMS, "Diminishing Manufacturing Sources and Material Shortages (DMSMS) is the loss or impending loss of manufacturers or suppliers of critical items and raw materials due to production discontinuance. DMSMS can be caused by rapid changes in item or material technology, uneconomical production requirements, foreign source competition, federal environmental or safety requirements, and limited availability or increasing cost of items and raw materials used in the manufacturing process. These problems can affect readiness and operating cost if left unresolved by increasing repair times and the cost of resolving the materiel shortage."

The problems that DMSMS tries to resolve "are an increasing concern as the service lives of DoD weapon systems are extended and the product cycle times for high technology components decrease. The problem is further complicated by a reduction in the industrial base dedicated to production of military equipment. In fact, the DoD now accounts for less than one-half of one percent of total microelectronic component sales. In addition, aging fleets of ships and aircraft have lost their original supplier-base of constituent mechanical, hydraulic, and other component parts."

DMSMS is used in a tactical way. It needs to be treated in a strategic and operational manner. This could effect new policies that addresses the root causes of the deterioration of the industrial base exemplified by the parts contained in DMSMS.

The policy implications of DMSMS are great and represent an opportunity to surface the issues discussed in this paper. The DMSMS database represents an example of how the industrial base is badly deteriorating. If

senior policy makers at the Department of Defense ignore the implications of DMSMS, there is a threat to military readiness and the national security of the country.

There are other examples of products essential to the smooth running of the military establishment that risk military readiness because of their scarcity. In one case, a critical component used throughout the services is now only made in one plant in the United States. Should our enemies figure out where that plant is and take it out, our entire military capability would be jeopardized.

The Industrial College of the Armed Forces (ICAF) at the National Defense University has an industry studies program that annually examines 20 industries representing the key “resources component of national security.” Over the years, their work has chronicled the deterioration in industries such as advanced manufacturing and shipping. Two examples of their industry categories follow.

Manufacturing

When government R&D investment in an industry deteriorates, it is only a matter of time before an industry is in trouble. Manufacturing R&D by the federal government is declining. Some say that over the last decade, it has fallen by half. According to *Manufacturing News*, “in the mid 1990’s, the government was spending \$1.5 billion on manufacturing technology related R&D, including such programs as Technologies Enabling Agile Manufacturing (TEAM) at the Energy Department and \$500 million in electronics manufacturing programs at DARPA. Both of those programs have been discontinued.”

Dick Engwall, President of RLEngwall & Associates, the 2002 recipient of the multi-association “Individual Manufacturing Excellence Award,” said, in the article, he is “concerned about the military’s desire to abandon programs related to materials, processes and affordability. In an analysis of DoD’s 2002 Science and Technology Plan he conducted on behalf of the Industry R&D Coalition, he noted funding for these areas has declined” so significantly...that they have basically been eliminated for the materials/processes defense technology area plan. The implications to military readiness and national security of this is disturbing.

Shipbuilding and Repair Industry

In May 2001, the U.S. Department of Commerce, (DOC) Office of Strategic Industries and Economic Security, in partnership with the Carderock Division, Naval Surface Warfare Center, U.S. Department of the Navy, completed a three-year national security assessment of the U.S. shipbuilding and repair industry. Some of the findings were disconcerting.

According to the DOC study, employment in the industry has “dropped sharply since the early 1980’s when total private employment was close to 180,000 workers. Survey estimates indicated that employment would decline to about 83,500 in 2000.” In addition, “orders for U.S. warships have declined 60 percent during the ten years since the end of the Cold War.”

Young people no longer view working in a shipyard as a viable way to make a living. Consequently, according to DOC, “survey responses indicate that labor shortages have reduced profits, impacted construction costs, and delayed project completion for most shipyards...In addition, many shipyards subcontracted work normally done at the yard and turned away new business. A few yards also used contract labor. Labor shortages affected military and commercial yards about equally.” This issue is troubling. As fewer young people become ship builders, there will be a permanent erosion of the “shipbuilding knowledge DNA” within the country. It could lead to an inability for the industry to survive, and the military implications of this are sobering.

According to the study, historically, “U.S. warship superiority has been the shipbuilding research and development expertise that currently resides across the... Navy’s laboratories, acquisition commands, and certain shipbuilders and universities. Collectively, these organizations have conceived and designed most of the state-of-the-art hull, mechanical, electrical, power projection, air defense, and undersea warfare capabilities that are operational today. With reduced research and development budgets, some of that capability is now becoming fragmented.”

These are just a couple of examples. This situation exists in many other industries, as well, such as machine tools, the high performance explosives

and explosive components industry, cartridge and propellant actuated device industry, the welding industry, and many others that have significant implications if we need to be ready to fight and win the nation's wars.

Permitting the industrial base to erode is harmful and dangerous on many levels. Remember, the national industrial base provides more than jobs. It maintains knowledgeable people and capable processes that working together in a system create war machines when necessary. Sometimes, those war machines are not available elsewhere during crisis situations, and losing capabilities that cannot easily be replaced puts the national security of the nation at risk.

Using systems thinking, the nation will benefit from seeing how powerful and productive common sense policy development could be for 21st century America to reduce and stop the erosion of the U.S. industrial base. Without such policy, the United States will have difficulty retaining its global leadership position, or its ability to sustain national security strategies and military capabilities and readiness.

References:

An Assessment of the U.S. Marine Transportation System: A Report to Congress, Department of Transportation Publication, Washington, D.C., 1999.

Critical Technology Assessment of Biotechnology in U.S. Industry, Office of Strategic Industries and Economic Security Study, U.S. Department of Commerce, Washington, D.C., 2002.

DMSMS, 2003, www.dmsms2003.utcd Dayton.com/.

Federal Resource Access Partnership: Industry Needs Assessment Survey 2001-2002, Office of Strategic Industries and Economic Security, U.S. Department of Commerce Publication, Washington, D.C., 2002.

2001 Industrial Sector Assessment of Watercraft, TACOM Acquisition Process Management Study, U.S. Army, Detroit, 2002.

Industry Attitudes On Collaborating With DoD in R&D: A National Security Survey of Select Business Sectors, Office of Strategic Industries and Economic Security, Department of Commerce, 2001.

Land Combat Systems, Industrial College of the Armed Forces Study, National Defense University, Washington, D.C., 2002.

Lawrence, Robert Z., *Can America Compete?* The Brookings Institution, Washington, D.C., 1984.

Manufacturing Empowerment Zone Needs Assessment Survey for the Long Beach and Greater Long Beach Area: Designed to Link Business Needs With Surplus Equipment from the Long Beach Naval Shipyard, Office of Strategic Industries and Economic Security, U.S. Department of Commerce Publication, Washington, D.C., 1998.

Manufacturing News, www.MANUFACTURINGNEWS.COM Thursday, January 2, 2003

Offsets in Defense Trade: Fifth Annual Report to Congress, Office of Strategic Industries and Economic Security, U.S. Department of Commerce, Washington, D.C., 2001.

National Assessment of the Impact of Welding on U.S. Economic Productivity, Office of Strategic Industries & Economic Security, U.S. Department of Commerce, Washington, D.C., 2001.

National Security Assessment of the Cartridge & Propellant Actuated Device Industry: A Report for the U.S. Department of the Navy, Office of Strategic Industries and Economic Security Study, U.S. Department of Commerce, Washington, D.C., 1995.

National Security Assessment of the High Performance Explosives and Explosive Components Industries: A Report for the U.S. Department of the Navy, Office of Strategic Industries and Economic Security, U.S. Department of Commerce, Washington, D.C., 2001.

National Security Assessment of the U.S. Maritime Industry: Shipbuilders' Supplier Base, U.S. Department of Commerce and The Naval Surface Warfare Center, Carderock Division, Publication, Washington, D.C., 2002.

Nivola, Pietro S., *Regulating Unfair Trade*, The Brookings Institution, Washington, D.C., 1993.

Shipbuilding, Industrial College of the Armed Forces Study, National Defense University, Washington, D.C., 2002.

Strategic Supply, Industrial College of the Armed Forces Study, National Defense University, Washington, D.C., 2002.

Technology and Industrial Base Sector Studies, January 1995 to Present, North American Technology and Industrial Base Organization (NATIBO) Publication, Alexandria, VA, 1998.

Tonelson, Alan, *The Race to The Bottom: Why a Worldwide Worker Surplus and Uncontrolled Free Trade are Sinking American Living Standards*, Westview Press, Cambridge, 2002.

Tyson, Laura D'Andrea, *Who's Bashing Whom? Trade Conflict in High-Technology Industries*, Institute for International Economics, Washington, D.C., 1992.