



NATIONAL DEFENSE UNIVERSITY

STRATEGIC FORUM

INSTITUTE FOR NATIONAL STRATEGIC STUDIES

20010927 034

Number 96, November 1996

The Changing Defense Industrial Base

by Gerald Abbott and Stuart Johnson

The productive and technological base of a nation is the foundation of its national power. This is not a new phenomenon.

The Greek chronicler, Hemocrates, noted 2400 years ago that the ability to wage war-as well as to influence events in the world without using military power-depends to a large degree upon a nation's wealth. A strong productive base provides the means and leverage for action and enhances a nation's ability to influence the outcome of international events.

Harvard scholar Paul Kennedy in *The Rise and Fall of the Great Powers* examines the importance of the productive and technological base in Great Power rivalry:

{The} historical record suggests that there is a very clear connection in the long run between an individual Great Power's economic rise and fall and its growth and decline as an important military power. . . . Technological and organizational breakthroughs. . . bring greater advantage to one society than another.

In the final analysis, the Cold War, in large part, turned out to be a contest between the superpowers' productive and technological bases. While the United States experienced steady growth, the declining Soviet productive base could not support both the demands of the military establishment and those of the Soviet people. Probably more than any other single factor, this poor economic performance led to the demise of the Soviet Union as a superpower and its subsequent dissolution as a state. Had the gross domestic product (GDP) of the Soviet Union expanded at a rate of 3 percent annually instead of declining, the superpowers might still be waging the Cold War.

This paper examines the changes in the defense industrial base that have accompanied the downsizing of our Armed Forces and what role the U.S. Government might play in reinforcing important sectors of the productive base.

In the past, the essential link between the productive base and national power was the ability to increase production runs of weapons through the course of a conflict. World War II and the Korean War are prime cases of needing time to close the gap between productive output and military requirements and paying for that time in blood and territory. Contemporary planning, however, focuses on future wars that will be of short duration and will therefore be fought with on-hand weapons and munitions, obviating the need for a massive industrial mobilization.

Today's more relevant questions appear to be whether the industrial base can, on an ongoing basis, supply the new technologies and weapons that will ensure an overwhelming advantage for U.S. and allied forces, and whether the military can incorporate these new technologies into its inventory on a timely basis.

The Industrial Base

If future conflicts are indeed fought with off-the-shelf systems, the major challenge for the U.S. defense industrial base will be to field leading edge weaponry rather than to handle massive, sustained production runs. Given the large inventory of defense hardware procured in the 1980s, coupled with the unlikelihood of a large scale war, the capabilities of the defense industrial base will probably not be tested seriously until obsolescence begins to threaten defense capabilities early in the next century. Thus, the argument over support of the defense industrial base beyond current needs turns on whether what remains of the base in the future will be able to respond in a timely manner to the requirement to replace obsolescent equipment or, in extremis, to support a long, hot war if predictions of relatively short conflicts prove wrong. The cost in time and money to reconstitute these once highly-prized skills-that are being allowed to languish-would be considerable.

The decline in U.S. defense procurement spending began in 1985 and has continued through 1996. Relative to other portions of the defense budget, the decline in the procurement account has been the most severe. Defense procurement went from a FY 1985 peak of \$136 billion to \$42 billion in FY 1996 (in FY 1996 dollars), that is, from the equivalent of 2.4 percent of the GDP to 0.6 percent. And these numbers understate the problem for defense firms, since procurement of goods with a large civilian market, like personal computers, fell proportionately less than the purchases of major weapons systems, which are key to maintaining the traditional defense industrial base.

Mergers and Economies of Scale

The response by defense firms to this decline has focused on mergers and consolidations to maintain competitiveness through economies of scale. In 1991, there were \$300 million worth of military industry mergers and that total has climbed to an annual rate averaging some \$10 billion since 1994, according to a Goldman Sachs report. The essential question is whether U.S. defense firms, despite the very significant decline in defense procurement, remain capable of satisfying the materiel requirements to support the use of national power. Contrary to popular belief, the defense industry is not simply a few large contractors that work exclusively to supply weapons for the Department of Defense (DOD). While there are some cases in which only a single or a few suppliers of a particular system exist, such suppliers typically engage some 800 to 1,000 subcontractors, who contribute about 60 percent of the value of delivered systems. Additionally, the vast majority of companies that do business with the DOD also undertake significant commercial work. John Alic and Harvey Brooks reported in *Beyond Spinoff* that the 67 largest defense contractors obtained only about 9 percent of their revenues from defense work, even during the height of the Reagan buildup.

Thus, the prime firms in the defense industry have a more varied customer base than is generally supposed. Subcontractors do not usually rely solely upon defense work either. Rather, most defense contractors are prepared to adapt to market forces as military orders dwindle, and most will probably continue to be capable of providing needed goods.

Still, certain industrial segments and technologies are so unique to defense that no commercial market for them exists or is likely to exist. Thus, despite the overall health of the manufacturing base, there are

some critical defense industrial activities where no commercial applications would sustain a company or production line between defense orders. This category includes laser guidance, stealth technology, and submarine construction. Such specialized items can be produced only with direct government support. Washington has to face the difficult choice of which companies to support. Ideally, the government would make these decisions based on a clearly articulated, high-priority military requirement, coupled with thorough cost/benefit analyses. But the synchronization of grand strategy, military requirements, and actual production is difficult to maintain in the best of times. During a significant reduction in forces and the subsequent contraction of support facilities and the defense industrial base, the question of what to save will be heavily influenced by our political process. The decision to produce the last Seawolf submarine is a case in point, regardless of the decision's merits.

Restructuring and Global Competition

In the present environment, the defense base faces at least two major challenges: continued restructuring to ensure survival in an era of modest defense spending, and competition in the global marketplace with foreign suppliers that are vying for a declining export market. The most overt response to these challenges has been an increased effort among defense firms to cooperate in the development and production of new systems so as to reduce risks, increase access to technologies, and share up-front costs. Such collaborations include the teaming of U.S. prime contractors for the duration of a project, as well as international collaborations, sometimes with government-owned foreign companies.

This collaborative trend within the United States may ensure the survival of a viable U.S. defense industrial base. But as defense firms continue to downsize and embrace international collaborative efforts to ensure survival, the U.S. defense industrial base loses some of its unilateral ability to respond to sovereign interests. Washington has the power to reverse these trends through direct intervention in the defense industry, but economic and political realities run counter to creation of a policy broadly supporting the declining base.

The Acquisition Process

Besides a diminished threat and limited defense dollars, there has been a fundamental shift in the way DOD approaches acquisition. Defense is increasingly relying on commercial products for major portions of its high-technology equipment. The old system of heavy, targeted DOD funding of research and development (R&D) followed by procurement is gone. In its place is a reduced DOD presence in the R&D market. The new challenge is to capitalize upon rapidly changing market-driven products so that DOD can take advantage of the latest technologies and commercial economies of scale. The old, unique defense supplier base is too inflexible and unaffordable. It lacks the means to rapidly exploit new technologies and fails to take advantage of commercial-sector production economies.

When DOD was the major buyer of high technology in the marketplace, it was assured first access to leading-edge technologies. DOD, however, no longer enjoys this position in most high-tech markets: its expenditures having been surpassed by a rapidly expanding civilian marketplace. This raises the issue of whether the defense-acquisition system can respond to changing needs and technologies fast enough so that front-line warriors have at their disposal the latest and best technology that industry can provide. The present acquisition system may be unable to shorten its delivery lead time (seven to 15 years, as of 1995) and thus unable to take advantage of high-tech production commercial-development cycles of two to five years. Two recent attempts at reforming the acquisition process, the Clinton Administration's Federal Acquisition Streamlining Act (FASA) of 1994 and Vice President Al Gore's National Performance Review (NPR), are targeted at accelerating the acquisition of major systems. To bear fruit

these efforts still have to overcome serious political, cultural, and organizational obstacles.

As an example, DOD's continual reliance upon outdated military specifications (milspecs) is seen by some as evidence of the acquisition system's inability to aggressively provide the best and latest technologies to U.S. warriors. While this allegation has a ring of truth, in a manufacturing environment, specifications are a foundation of quality production. Additionally, there are many areas of military equipment production where there are no commercial specifications available. The challenge goes beyond the avoidance of milspecs to the identification and use of the latest and best specifications to describe the requirement.

There are many examples where the DOD acquisition system was adjusted to accommodate new threats and new realities (the Polaris missile program, the nuclear-power program, and the many highly classified "black world" efforts). However, the point remains that the acquisition system will be sorely challenged to enable the military to access dynamic developments in computing and telecommunications. In a future conflict or arms race, the nation with the shortest acquisition lead time and product-cycle time will have a distinct advantage.

The government's challenge is to adapt its acquisition system to make the defense market more commercial industry friendly in order to gain maximum advantage of commercial technologies and prices while maintaining defense-unique capabilities where required. Specific military mission analysis can assist in identification of necessary defense-unique products. Formulating policies to protect and foster unique capabilities is no trivial task, being fraught with political difficulties and serious trade-offs; for example:

- national vs collaborative development and production
- domestic vs foreign sourcing,
- current capability vs future capability, and
- competition vs sole sourcing.

The alternative is to let a mix of the political process and the marketplace decide. That alternative has proven more efficient than generally credited.

Conclusions

The U.S. productive and technological base is quite strong and doing well in comparison with its foreign peers, providing a solid foundation for the exercise of national power. Yet, the base is constantly changing. The major forces affecting the base include:

- A sharp rise in the service sector coupled with a steady growth in manufacturing production.
- A greater reliance upon trade as a source of national income.
- Increased globalization of information, manufacturing, and finance.
- Expansion of the role of international firms in world affairs.

The rise of information technology dominated by the United States.

Reduced defense expenditures for R&D and procurement, resulting in a smaller defense industrial base.

A significant change in defense acquisition focus toward increased use of commercial items and technology.

The challenge for the United States is to harness the economic growth capacity of new technologies and industries to remain the world's premier power. Debate over the appropriate role of the government in preserving manufacturing skills unique to defense requirements will continue, but, nevertheless, the ability of the U.S. military to maintain its leading edge will increasingly depend on its success in adapting the rapid advances in sensor, computing, and telecommunications technologies in the commercial sector to military requirements.

Despite the debate, the productive and technological base remains a firm foundation of national power against which a number of instruments, including military power, may be leveraged to influence the outcome of world events.

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Editor - Jonathan W. Pierce

INTERNET DOCUMENT INFORMATION FORM

A. Report Title: The Changing Defense Industrial Base

B. DATE Report Downloaded From the Internet: 09/27/01

C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #):
National Defense University Press
Institute for National Strategic Studies
Washington, DC 20001

D. Currently Applicable Classification Level: Unclassified

E. Distribution Statement A: Approved for Public Release

F. The foregoing information was compiled and provided by:
DTIC-OCA, Initials: __VM__ Preparation Date 09/27/01

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.