

INSTITUTE FOR DEFENSE ANALYSES

**The Impact of Organizational Rivalry
on the Defense Industrial Base:
Discussion Summary**

James R. Dominy, Project Leader
Brandon R. Gould
R. William Thomas

June 2011

Approved for public release;
distribution is unlimited.

IDA Document D-4297

Log: H 11-000619



The Institute for Defense Analyses is a non-profit corporation that operates three federally funded research and development centers to provide objective analyses of national security issues, particularly those requiring scientific and technical expertise, and conduct related research on other national challenges.

About This Publication

This work was conducted by the Institute for Defense Analyses (IDA) under contract DASW01-04-C-0003, Task AH-7-3186, "Value of Competition," for the Office of the Director, Industrial Policy, Office of the Under Secretary of Defense (Acquisition, Technology and Logistics). The views, opinions, and findings should not be construed as representing the official position of either the Department of Defense or the sponsoring organization.

Acknowledgments

David L. McNicol was the technical reviewer.

Copyright Notice

© 2011, 2012 Institute for Defense Analyses
4850 Mark Center Drive, Alexandria, Virginia 22311-1882 • (703) 845-2000.

INSTITUTE FOR DEFENSE ANALYSES

IDA Document D-4297

**The Impact of Organizational Rivalry
on the Defense Industrial Base:
Discussion Summary**

James R. Dominy, Project Leader
Brandon R. Gould
R. William Thomas

Executive Summary

Rivalry between and among the military departments has been an element of the development of the United States military establishment, especially in the post-World War II period. While some may view such rivalries as impediments to the development and maintenance of effective defense capabilities, others argue that organizational rivalries, properly managed, spur the development of innovative solutions to difficult problems. This is consistent with economic theory, which suggests that the existence of multiple buyers spurs innovation as suppliers attempt to gain a competitive advantage through product differentiation.

To investigate the impact of organizational rivalry on the industrial base, IDA sponsored a discussion between academicians who have studied organizational rivalry and defense professionals who have had significant experience in senior decision-making positions within the Department of Defense (DoD). The discussions revolved around the following topics:

- The prevalence and intensity of rivalries within the U.S. military establishment and the observed changes over the past 50 years;
- The relationship between jointness and organizational rivalry;
- The impact of rivalry between and among the military departments on the defense industrial base; and
- The proper role of the Office of the Secretary of Defense (OSD) in managing organizational rivalries.

The discussions did not attempt to yield evidence-based conclusions, but rather to attempt to frame issues for further study.

The general consensus of the group was that organizational rivalry among the military departments, and among different elements within a department, encourages innovation in the defense industrial base. The impact of jointness on the industrial base was more ambiguous; although the establishment of a joint program may reduce the opportunities for firms to compete in one segment of the industrial base, other opportunities may exist. Finally, the group concluded that the DoD today does not have the culture or the mandate to encourage the military departments to engage in productive competition, nor does OSD have the processes in place to control such competitions and to pick winners and losers.

Contents

A.	Introduction	1
B.	Theories of Military Innovation	2
1.	Innovation is Driven by Civilian Leadership	2
2.	Innovation as a Result of Internal Dynamics	3
3.	Innovation as a Result of Inter- and Intra-Service Rivalry	3
C.	Case Studies.....	3
1.	Polaris	4
2.	Unmanned Aerial Vehicles (UAVs).....	5
D.	Discussion.....	6
1.	Organizational Rivalries.....	6
2.	The Role of “Jointness”	7
3.	Rivalry and the Industrial Base	8
4.	The Proper Role of OSD in Managing Organizational Rivalry	9
E.	Conclusions	9
	Appendix A. Participant Biographies	A-1
	References	B-1
	Abbreviations	C-1

A. Introduction

Organizational rivalry has been an important facet of the development of the American military establishment, especially from World War II onward.¹ The existence of three separate Services, as well as quasi-independent elements such as the U.S. Marine Corps and the U.S. Special Operations Command, with often overlapping mission responsibilities, establishes fertile ground for competitions over missions and functions. Such competitions are widely viewed as wasteful of resources and impediments to the development of effective military capabilities.

There is, however, another view, that such rivalries, properly managed, provide the impetus for the development of major innovations in military strategy and doctrine, and in the weapon systems necessary to support those strategies and doctrines. This is consistent with economic theory, which suggests that the existence of multiple buyers spurs innovation through a search to differentiate products.

To investigate the impact of rivalry among the elements of the U.S. military on the rate of innovation produced by the defense industrial base, the Institute for Defense Analyses (IDA) organized a discussion among a select group of defense experts. The group represented both academicians who have studied the role of rivalry in military organizations and former officials of the U.S. Department of Defense (DoD) who have extensive senior level experience in defense management and defense acquisition. The participants were:²

- Dr. David McNicol, Director, Cost Analysis and Research Division, IDA (Moderator)
- Mr. Michael Dominguez, Director, Strategy, Forces and Resources Division, IDA
- Dr. Thomas Frazier, Deputy Director, Cost Analysis and Research Division, IDA
- Dr. Eugene Gholz, Associate Professor, LBJ School of Public Affairs, University of Texas
- GEN (Ret) H.T. Johnson, Adjunct Research Staff Member, Strategy, Forces and Resources Division, IDA

¹ For an analysis of such rivalries in the early post-WW II period, see Samuel P. Huntington, "Interservice Competition and the Political Roles of the Armed Services," *The American Political Science Review*, 55, no. 1: 40-52.

² Biographies of participants are in Appendix A.

- Dr. Harvey Sapolsky, Professor of Public Policy and Organization (Emeritus), Massachusetts Institute of Technology

Mr. James Dominy, Research Staff Member, IDA, contributed a briefing that framed the discussion.

The group convened on November 3, 2010 at IDA to discuss these issues. This paper is a summary of that discussion and of the conclusions arrived at by the group. The narrative attempts to convey the consensus of the group, not that of individual participants. Where opinions differed, that is pointed out without individual attribution.

B. Theories of Military Innovation

A number of researchers have studied the process by which innovation occurs in military organizations in order to better understand these organizational processes. The results of this research can be summarized into three main schools of thought:³

- Innovation is driven by civilian leadership.
- Innovation is the result of internal dynamic processes.
- Innovation is the result of inter- and intra-Service rivalries.

We will discuss each of these theories in turn.

1. Innovation is Driven by Civilian Leadership

This line of analysis, put forth by Barry Posen, argues that pressures from civilian leadership (within and outside of the military establishment) generate the force necessary to induce change in military organizations. External pressure is required because the attachment to current doctrine and weapons is so strong that the bonds can only be broken by external forces.

The development and accelerated purchase of Mine Resistant Ambush Protected (MRAP) vehicles would be an example of this type of innovation. Civilian leaders pushed the Army acquisition community into making the purchase of such vehicles an absolute priority, in the face of military personnel losses due to improvised explosive devices.

³ For a discussion of these approaches, see Peter Dombrowski and Eugene Gholz, *Buying Military Transformation: Technological Innovation and the Defense Industry* (New York: Columbia University Press, 2006), 12–14; and Harvey M. Sapolsky, “On the Theory of Military Innovation,” *Breakthroughs* IX, no. 1 (Spring 2000): 35–39.

2. Innovation as a Result of Internal Dynamics

This line of analysis, led by Stephen Rosen, views innovation as resulting from internal dynamics within the Services themselves. Visionary military leaders develop new concepts, recruit like-minded mid-level officers to flesh out tactics and doctrine, and provide the career pathways to senior command levels, thus institutionalizing the change. Dr. Rosen cites the development of air defense radar in Great Britain and carrier aviation by the U.S. Navy prior to World War II as examples of innovation resulting primarily from internal dynamics within the military.

3. Innovation as a Result of Inter- and Intra-Service Rivalry

This school of thought, led by Owen Cote and Harvey Sapolsky, argues that rivalrous behavior produces alternative methods by which command authorities can achieve a desired end. Rivalries arise because of Service fears about their current and future relevance. These fears spur the Services to develop innovative solutions to maintain a current mission and to attempt to capture a share of any new mission. This sets up a competition between the Services, with each bringing forth alternative solutions to a mission need. These alternative solutions are debated in full view of the leadership, who are then in a position to adjudicate the competition and provide the resources necessary to bring the winning solution(s) to fruition. The competing organizations' "buyers" engage in more experimentation due to the fluidity of buyer preferences. This experimentation offers the potential to craft solutions to different organizational preferences, a solution not possible if there is only one buyer.

Each of these models presumes the existence of external forces, but differs in the process by which an organization reacts to those external forces. Dr. Posen's work is based, in part, on lessons of the United States and Great Britain in the period leading up to World War II, where civilian leaders pushed their military establishments for innovations in armored warfare and fighter aircraft. However, most successful military innovations have antecedents in concepts driven by innovative military leadership. Carrier warfare and ballistic missiles exemplify the role of internal leadership. Dr. Rosen argues that these internal dynamics, once established, are sufficiently strong that they negate the effects of a rapid turnover of military and civilian leadership on the sustainment of innovation. It should be noted, however, that, in the absence of war, there is little effective feedback to advance the process of innovation.

C. Case Studies

To examine these theories in more concrete terms, the group examined two case studies: the development of the Polaris class of ballistic missile submarines, and the development of Unmanned Aerial Vehicles (UAVs). The case studies were designed to

elicit discussion about the patterns of organizational rivalry, and to discuss the impact of rivalry on innovation in weapon systems.

1. Polaris

The development of the Polaris program⁴ demonstrates the role of organizational rivalry in innovation in an environment where all of the Military Services were competing for a share of the new strategic deterrence mission area. The Navy had to organizationally commit to a role in this mission area, and had to develop a solution that differentiated itself from the Air Force and Army solutions, which were already under development. The Chief of Naval Operations envisioned the strategic mission as a key mission for the future of the Navy. The proposed Navy entrant into the mission area, a submarine-fired nuclear missile, required not just the submarines and missiles, but the surface ships, helicopters, and other assets required to protect the submarines and to attack the enemy's force. Winning a share of the deterrence mission area would thereby assure the continued relevance of the Navy in the changing international security environment.

The key to the success of the Navy in the competition was the development of a viable, solid fuel missile of suitable size and performance, to be launched from a submarine; without such a solution, it is unlikely that the Navy could have developed an acceptable system capable of winning a piece of the mission. The Air Force had started working on solid fuel missiles for its future systems. The Navy successfully pushed the industrial base to accelerate this development and the development of related technologies, to create a system that was able to capture a long-term share of the strategic deterrent mission.

The development of the Polaris system not only cemented a long-term mission for the Navy, but resulted in creative destruction, in that its success killed the competing Army missile system and a planned Air Force strategic bomber program. It accelerated the development of solid fuel missiles technology. But the apparent success of the Navy in developing the Polaris system acted to spur the Air Force to develop its second generation system, the solid fuel Minuteman missile, thus continuing the rivalry between the two Services.

⁴ For a complete treatment, see Harvey M. Sapolsky, *The Polaris System Development: Bureaucratic and Programmatic Success in Government* (Cambridge, MA: Harvard University Press, 1972), on which this case study was based.

2. Unmanned Aerial Vehicles (UAVs)

The case study on UAVs⁵ provided the basis for a discussion of innovation trends over a long period (in this case, 40 years) under a variety of organizational structures and environments. Early UAV efforts in the Air Force were largely funded by the National Reconnaissance Office for strategic intelligence missions. Supporting development out of the intelligence budget offered the resources necessary to aggressively pursue innovative technologies, but did not serve to institutionalize strong support for UAVs within the Air Force. This was demonstrated when the responsibility for UAV development transitioned to the Air Force in the 1980s; the programs could not garner sufficient support, in competition with other Air Force missions, to thrive. There was also no significant competition over the mission area during this period to spur the development of alternative approaches to the problems encountered.

During the decade of the 1980s, a number of UAV development programs were initiated, but technical immaturity and lack of commitment prevented these programs from reaching fruition. The Congress, frustrated by apparent duplication, high program cost, and program failures, directed the implementation of a Joint Program Office for UAVs in 1988. UAV development was further centralized in 1993 with the creation, by the Office of the Secretary of Defense (OSD) and the Congress, of the Defense Airborne Reconnaissance Office (DARO). Although it did not achieve its intended goal, DARO could count as its signature success the RQ-1 Predator, before the organization was disbanded and control of UAVs returned to the Services in 1988. Since that time, OSD has maintained a “light” control over the Services’ UAV programs, which had swelled to over 30 by 2009.

Although this case appears to demonstrate that consolidation of individual Service requirements into a joint program suppresses innovation, the real lesson may be more complicated than that. Enabling technologies, such as communications and navigation, were immature during the early UAV development period, and the mission environment during the Cold War period was much different than it is today. There is evidence that attempts to force disparate requirements into a common system resulted in solutions that, in the end, were ill-suited to all users’ needs. But DARO was formed because of frustration over the Air Force’s lack of enthusiasm for the airborne reconnaissance mission in general, and the development of UAVs in particular. Even though it did not achieve the envisioned success in developing final systems, it does appear to have been instrumental in developing those critical technologies that allowed the market to grow substantially after its demise. What is clear is that the centralization of control over the mission area prevented the development of strong institutional attachments in the

⁵ This material was based, in large part, on Thomas P. Ehrhard, “Air Force UAVs: The Secret History,” Mitchell Institute Press, July 2010.

Services for the systems under development, and the lack of parallel development of doctrine, strategies, and organizational structures that would provide long-term support for the solutions.

D. Discussion

1. Organizational Rivalries

Historically, the Royal Navy has dominated British military planning, while in China, the People's Liberation Army is paramount. The United States may be unique because it has no dominant military Service and, moreover, each of the Services has tactical aircraft units and both the Army and the Navy have ground forces. Each of the Services has a vision of its future within the military establishment. But the missions and functions inherent in these visions tend to overlap. This establishes the basis for rivalries among the Services and among elements within the Services, as they each seek to gain, or retain, those missions and functions that are critical to achieving their desired end states. The context in which the rivalry occurs influences the intensity of the rivalry. In cases of new missions (like strategic deterrence in the case of Polaris), the rivalry may be intense, as each Service seeks to gain a share of that new mission.

Innovation can be an organizational response to new strategic imperatives or to external threats. If, for example, the very existence of an organization is threatened, it may respond with disruptive innovation in order to preserve itself. Likewise, rivalrous situations threaten the organization's current or future missions and functions. The rivalry creates incentives for organizations, in concert with their industrial partners, to seek innovative solutions in order to convince senior decision-makers to assign, or preserve, the desired missions and functions.

Organizational rivalry among the Services changes the organizational dynamics between the Services and OSD. Only OSD is in a position to resolve rivalries among the Services, thus putting OSD in a position to pick winners and losers. To the extent that the Services can resolve differences among themselves, they avoid creating situations that demand OSD action. However, the innovative impact of rivalry may be short-circuited by these agreements among the Services to preserve the Services' mission space—for example, by cartelization through participation in joint programs.

Inter-Service rivalry appears to be less common today than it was during the Cold War period. This may be due to the fact that the pressure to make the right technology choices was more important during the Cold War, when technological superiority was considered essential. Today, however, one may consider training and preparedness to be more important tasks of the Military Services, and these functions are less likely to generate rivalrous behavior because they relate to how well one does an assigned

mission, rather than what mission a Service should be assigned. The implementation of the Goldwater-Nichols Act in 1986 also appears to have reduced rivalry between the Services. The facts that there have not been many choices made over the last 20 years that had the potential to alter roles and missions, and that the Service budget shares have remained relatively constant over this period, provide some evidence for this view.

2. The Role of “Jointness”

The Congress and the DoD have aggressively pushed the concept of “jointness” in order to ensure that the Services can perform as an operationally effective team. But has the pressure for jointness tended to reduce the occasions for rivalry, and the attendant opportunities for material innovation? The answer to this question depends, in part, on how one defines “joint.” One can look at jointness from an operational perspective, which involves the alignment of doctrine, tactics, and management in order to achieve a higher level of mission effectiveness. Although these “how we fight” decisions may impact material solutions, it is as a second-order effect.

Often, however, attempts are made to try to enforce jointness in the acquisition process, through mechanisms such as mandating the use of common systems developed by Joint Program Offices. It is also often argued that a common system will achieve cost savings. Possible savings must be weighed against the fact that the value of a common system must be measured by its effectiveness in the specific missions it was intended to accomplish; common systems may or may not be effective in all of the missions they were designed to achieve.

The Defense Integrated Military Human Resources System (DIMHRS) may be cited as an example of enforced jointness. OSD mandated a joint personnel management information technology system. Implementation required the harmonization of each of the Service’s personnel pay systems. This harmonization failed, with the result that the integrated system was abandoned. During the period the joint program operated, however, no innovation was accomplished by the individual Services.

One cannot automatically presume that centralization and innovation cannot co-exist. Military medicine has been centralized since the 1980s, yet revolutionary advances have been made in battlefield medicine. Unfortunately, there are no studies to help us determine the interplay of centralization and innovation.

There does not appear to be a clear relationship between common systems and the probability of program success or failure; not all failed programs are joint, and not all joint programs are failures. It may be useful to view the question of the success of joint programs along two separate dimensions: jointness vs. rivalry, and incremental change vs. radical change. In the recent past, the military has striven for transformational solutions, but these complex solutions often proved difficult to achieve. At this juncture,

it is not clear how these two dimensions interact; for example, are individual solutions developed in a competitive environment more likely to be incremental changes, with a lower implementation risk?

In many cases, imposition of jointness relies on one Service's lack of enthusiasm for challenging another Service's programs and missions. As such it represents a form of collusion on the current assignment of those missions; if the collusion were eliminated, rivalry would reappear. But an often unrecognized cost of a decision to impose a common solution to satisfy a disparate set of requirements is the loss of innovation that can occur when multiple teams (military and industry) actively operate in a segment of the defense market.

3. Rivalry and the Industrial Base

Organizational rivalry impacts the defense industrial base by providing incentives for firms to develop innovative solutions to help their customer (the relevant Service or element of a Service) gain or retain a mission or function. This effect, however, is difficult to measure. Did the award of the Joint Strike Fighter (JSF) to Lockheed Martin, for example, reduce or increase innovation in the industrial base? On one hand, jointness precluded competitive innovations from other potential firms on other fighter programs. On the other hand, the loss on the JSF program appears to have led Boeing to become innovative in the UAV market segment. It is not clear that there is a direct correlation, as defense firms tend to be responsive to their customers regardless of the competitive environment. And we do not know what innovation might have occurred if there had been several contract awards for individual systems.

The effect of organizational rivalry should vary with the condition of the industrial base. While the effect of rivalry on innovation may decrease as the number of sellers in the industrial base falls, economic theory suggests that the number of buyers is more important to spurring innovation than the number of sellers. This is true because the existence of multiple buyers provides greater rewards from product differentiation. This impact is strengthened in a world with few buyers—the addition of even one buyer presumably has a proportionately higher benefit.

Sales of military equipment to foreign customers may act to spur innovation, under appropriate conditions. Foreign customers do act as another buyer; however, foreign purchasers are often not looking to U.S. defense firms for the level of transformational innovation that Service rivalries can engender. They may be looking to buy the same capabilities currently in the U.S. inventory. Or they may be looking for platforms into which they can insert locally developed subsystems (such as the locally developed radar Israel installed on F-16 aircraft purchased from the United States). Finally, export control restrictions may act as a bar to the development and sale of innovative technology to foreign customers.

4. The Proper Role of OSD in Managing Organizational Rivalry

The Secretary of Defense and his staff should act as the judge to pick winners and losers in competitions for missions and functions. The competitors not only develop proposed solutions, but provide critiques of other proposed solutions in order to differentiate their proposals. But where in the process should such decisions be made? Some participants believed that competitions for missions and functions need to be made before system requirements are established, as the system is intended to fulfill the mission. For example, the Marine Corps' attachment to the V-22 aircraft owes much to its perception of the systems now required for a successful forcible entry from the sea. But the first decision should be whether the Marine Corps should be in that mission space. The second decision is the system decision—whether the V-22 is the appropriate system to support that mission.

However, the current OSD processes may not operate effectively at the mission and function level. Some believed that, as currently structured, these processes have little influence in the operational or the military requirements spheres of the defense establishment. The OSD staff does, however, have oversight responsibility for, and therefore influence on, the Services' organize, train, and equip functions. If this is the main lever of influence, then the OSD staff tends to over-supervise these functions. Yet attempting to impose a joint material solution on Service-unique requirements may result in a solution that sub-optimizes each of the Service requirements. Therefore, some participants argued, the most effective place to attempt to impose this type of jointness is at the mission and function level. Once OSD accepts a Service's interpretation of its future vision of its mission, it is difficult to argue over the material requirements that flow from that vision.

E. Conclusions

The general consensus of the participants is that organizational rivalry among the Military Services, and among elements within a Service, does encourage innovation in the defense industrial base. Although this effect may be reduced as the number of firms in the industrial base falls, the participants believe that the number of buyers has a greater effect on innovation than the number of sellers. The solutions produced through this process may not be the most cost-effective ones in the narrow sense (for example, on an individual system level), but the proper measure should be the overall cost of satisfying the mission requirement.

Most of the group concluded that an emphasis on jointness, as expressed in joint programs, has an ambiguous effect on the industrial base. Joint programs offer industry fewer opportunities to compete for contracts, and thereby fewer incentives to develop innovative solutions. Less opportunity in one particular market segment, however, may not be the proper metric, as it is feasible that innovative firms will turn their talents to

opportunities in other market segments. Foreign markets may also offer opportunities to pursue competitive opportunities; whether these opportunities spur innovation depends upon the ability of the firm to offer unique military products, differentiated from those products developed for, and sold to, the DoD.

Finally, the group discussed whether the DoD today has the culture, a mandate, or the processes necessary to allow the Services to productively challenge one another for roles and missions. The Quadrennial Defense Review (QDR) would appear to be an ideal vehicle to spur the appropriate competition, but recent QDRs have not done so. The Bottom-Up Review, conducted in 1993, may be the last time the Department attempted to facilitate a competition over roles and missions. Some believe that this is due, in part, to conscious efforts on the part of the Services, acting jointly, to avoid open rivalries and thereby create opportunities for OSD to pick winners and losers. Such efforts to suppress rivalry also suppress the incentives to invest in creative alternatives and the open debate about the strengths and weaknesses of those alternatives.

The lack of the structure and processes to allow such competitions may be traced to an imbalance in the regular OSD staff processes. As currently structured, these processes have little influence in the operational or military requirements spheres of the defense establishment. As the OSD staff does not currently operate effectively in the requirements process, enforcement of jointness tends to fall into the acquisition processes, a process the OSD staff has considerable influence over. But attempting to build joint programs from Service-unique (and DoD approved) requirements has proven ineffective in the past, often yielding systems that are sub-optimized for most uses and are unnecessarily complex.

Appendix A.

Participant Biographies

Michael L. Dominguez

**Division Director
Strategy, Forces and Resources Division
The Institute for Defense Analyses**

Mr. Dominguez received his Bachelor of Science degree from the U.S. Military Academy at West Point. He received his Master of Business degree from Stanford University. He has attended Harvard University's Program for Senior Officials in National Security.

Mr. Dominguez was in the U.S. Army's 1st Battalion, 509th Infantry Airborne Battalion Combat Team, and in Headquarters, Southern European Task Force. After leaving the military, he held various positions in the Office of the Secretary of Defense for Program Analysis and Evaluation where he was a Program Analyst, an Executive Assistant, and Director of Planning and Analytical Support.

Later in his career, Mr. Dominguez was Associate Director for Programming and an Assistant Director for Space, Information Warfare, and Command and Control, in the Office of the Chief of Naval Operations. He has served as Research Project Director for the Center for Naval Analyses, Assistant Secretary of the Air Force in Manpower and Reserve Affairs, and Principal Deputy for the Under Secretary of Defense for Personnel and Readiness.

Mr. Dominguez holds several distinguished honors, including military and civil service awards. He has been with IDA since 2009.

Thomas Frazier
Deputy Division Director
Cost Analysis and Research Division
The Institute for Defense Analyses

Thomas Frazier is the Deputy Director, Cost Analysis and Research Division (CARD). Since 2003 he has led IDA's support of the Department of Homeland Security's SAFETY Act [Support Anti-terrorism by Fostering Effective Technologies Act of 2002] program. In that capacity he supervises a cadre of about 20 IDA personnel and pool of over 200 subject matter experts drawn from the federal government, IDA, federal laboratories, other non-profit organizations, and academia. He won the Andrew J. Goodpaster Award for Excellence in Research in 2000. He also has served as Editor-In-Chief, Topics in Operations Research. He holds a Ph.D. in Economics from American University.

Eugene Gholz

Associate Professor of Public Affairs

LBJ School of Public Affairs, The University of Texas at Austin

Current Position: Associate Professor, LBJ School of Public Affairs, Univ. of Texas
(On leave at Department of Defense Office of Industrial Policy,
2010–2011)
(Assistant Professor, 2005–2007)

Other Affiliations: Research Affiliate, Security Studies Program, MIT
Associate Editor, *Security Studies*
Member, Council on Foreign Relations

Education: Massachusetts Institute of Technology
Ph.D., Political Science, February, 2000
B.S., Political Science, June, 1992
B.S., Materials Science and Engineering. June, 1992
Phi Beta Kappa

Previous Positions:
2000–2005 Assistant Professor / Assistant Director, Patterson School of
Diplomacy & International Commerce, University of Kentucky
1999–2000 Research Associate, MIT Security Studies Program
1998–1999 Instructor, George Mason University Institute of Public Policy
1997–1998 Research Fellow, Olin Institute for Strategic Studies, Harvard
University

Books:

U.S. Defense Politics: The Origin of Security Policies, London: Routledge, 2009 (with
Harvey Sapolsky and Caitlin Talmadge).

Buying Military Transformation: Technological Innovation and the Defense Industry,
New York: Columbia University Press, 2006 (with Peter Dombrowski).

Selected Publications:

“Protecting ‘The Prize’: Oil in American Grand Strategy,” *Security Studies* 19, No. 3
(Fall 2010): 453–85 (with Daryl Press).

“The Strait Dope,” *Foreign Policy* (September/October 2009): 105.

“The Nixon Doctrine in the 21st Century,” *World Politics Review*, July 22, 2009.

“Identifying Disruptive Innovation: Innovation Theory and the Defense Industry,”
Innovations 4, No. 2 (Spring 2009): 101–17 (with Peter Dombrowski).

“The RMA and the Defense Industry,” in *U.S. Military Innovation since the Cold War: Creation without Destruction*, edited by Harvey M. Sapolsky, Benjamin H. Friedman, and Brendan Green, London: Routledge, 2009.

“Systems Integration for Complex Defense Projects,” in *Organizing for a Complex World*, edited by Guy Ben-Ari, Washington: Center for Strategic and International Studies, 2009.

“Globalization, Systems Integration, and the Future of Great Power War,” *Security Studies* 16, No. 4 (Winter 2007-08): 615–36.

“The Curtiss-Wright Corporation and Cold War-Era Defense Procurement: A Challenge to Military-Industrial Complex Theory,” *Journal of Cold War Studies* 2, No. 1 (Winter 2000): 35–75.

Consulting:

On military transformation, acquisition reform, and defense industry strategy: Naval War College, Joint Forces Command, Office of Net Assessment, Lockheed, Boeing, and Hughes Electronics.

On U.S. grand strategy: Office of Net Assessment.

On energy security: National Intelligence Council.

Hansford T. (H.T.) Johnson
Adjunct Research Staff Member
Strategy, Forces and Resource Division
The Institute for Defense Analyses

Mr. Johnson received his Bachelor of Science in Engineering Science in the first class at the U.S. Air Force Academy. In 1989, he would become the first graduate to be promoted to General (4 stars). He received two Master's Degrees: Master of Science in Aeronautics from Stanford and Master of Business Administration from Colorado. He has attended the Air Force Squadron Officer School, the U.S. Army Command and General Staff College, and the National War College. He attended the Senior Management Course at Dartmouth.

During his career, Mr. Johnson held many positions with the Air Force. He has been a Forward Air Controller, Aeronautics Instructor, a Commander of the 22nd Bomb Wing, Assistant Deputy Commander for Plans with the Strategic Air Command, Deputy and Director of Programs for the Air Staff, Vice Commander of the Pacific Air Force Partner, Deputy Command-in-Chief of the U.S. Central Command, Director of Joint Staff, and Commander-in-Chief of the U.S. Transportation Command and Military Airlift Command.

After leaving the Air Force, Mr. Johnson was President and Chief Executive Officer (CEO) of the USAA Capital Corporation where he provided non-insurance services to USAA members through the USAA Federal Savings Bank, the USAA Investment Management Company, the USAA Real Estate Company, and the USAA Buying Service. These companies managed \$13 billion in USAA insurance portfolios, \$16 billion in mutual funds, \$10 billion bank, and \$1 billion in real estate holding.

Mr. Johnson has been the Executive Vice President of the Credit Union National Association (CUNA), where he provided oversight for the daily operations and administrative activities of CUNA and Affiliates. He worked closely with the President in setting overall strategic direction and planning.

Later, as President and CEO of EG&G, Mr. Johnson was responsible for leading the \$600+ million company, which included supply management, engineering, and scientific, technical, and operations support services to government agencies and industrial customers.

Mr. Johnson returned to government as a civilian serving as Assistant Secretary of the Navy for Installations and Environment, and later as Acting Secretary of the Navy where he led the Navy/Marine Corps Team during Operation Iraqi Freedom, continuing operations in Afghanistan, operations in Liberia, and around the world. He managed the Navy Department's budget of \$110 billion and more than 800,000 personnel.

Over several different positions, Mr. Johnson had close ties with the Persian Gulf. In the early 1960s, he flew C-130s in the area. During the escorting of ships through the Gulf in 1987–1988, Johnson was Deputy Commander-in-Chief, US Central Command. During Desert Storm, he provided the movement to the Gulf as Commander-in-Chief of the U.S. Transportation Command. During the invasion of Iraq in 2003, he was Secretary of the Navy.

Mr. Johnson is active in several professional societies and holds several distinguished honors. He has been at IDA since 2004.

David McNicol
Division Director
Cost Analysis and Research Division
The Institute for Defense Analyses

David McNicol has been employed at IDA since October 2002. He became director of the Cost Analysis and Research Division in March 2006. Dr. McNicol served in the Office of Program Analysis and Evaluation (PA&E) of the Office of the Secretary of Defense from 1982 until his retirement from the civil service in 2002. From early 1988 until his retirement, Dr. McNicol was Deputy Director of PA&E for Resource Analysis and chairman of the Cost Analysis Improvement Group.

Before joining DoD, McNicol held positions in the Department of Energy, the Department of the Treasury, and on the President's Council of Economic Advisors. Earlier in his career, Dr. McNicol taught at the University of Pennsylvania and the California Institute of Technology. He holds a B.A. in economics from Harvard, and M.S. (management) and Ph.D. (economics and finance) from the Massachusetts Institute of Technology. Dr. McNicol's awards include the Distinguished Presidential Rank Award (1996, 2001), Meritorious Presidential Rank Award (1988, 1993), and the Department of Defense Distinguished Civilian Service Award (1989, 1993, 1997, 2001, 2002). His primary research interests are the DoD acquisition and resource allocation processes.

Harvey M. Sapolsky
Professor of Public Policy and Organization (Emeritus)
Massachusetts Institute of Technology

Dr. Sapolsky is Professor of Public Policy and Organization, Emeritus, at the Massachusetts Institute of Technology (MIT) and the former Director of the MIT Security Studies Program. He has written extensively on U.S. and comparative science, defense, health, and communication policies. In the defense arena, he has specialized in weapons acquisition policy, the defense industry, defense politics, national strategy, and military innovation.

Professor Sapolsky has been a visiting professor at the University of Michigan and the U.S. Military Academy. He has also been a consultant to many government agencies, national commissions, and firms.

Professor Sapolsky's most recent books are *U.S. Defense Politics: The Origins of Security Policy* (with E. Gholz and C. Talmadge) and *U.S. Military Innovation Since the End of the Cold War: Creation Without Destruction* (edited with B. Friedman and B. Green).

References

- Baldwin, Hansom W. "Slow-Down in the Pentagon." *Foreign Affairs* 43, no. 2 (January 1965): 262–280.
- Birkler, John. "Untying Gulliver: Taking Risks to Acquire Novel Weapon Systems." Santa Monica, CA: RAND Corporation, 2009.
- Birkler, John., Anthony G. Bower, Jeffrey A. Drezner, Gordon Lee, Mark Lorell, Giles Smith, Fred Timson, William P. G. Trimble, and Obaid Younossi. *Competition and Innovation in the U.S. Fixed-Wing Military Aircraft Industry*. Santa Monica, CA: RAND Corporation, 2003.
- Bracken, Paul, Linda Brandt, and Stuart E. Johnson. "The Changing Landscape of Defense Innovation." *Defense Horizons*, no. 47 (July 2005): 1–8.
- Christensen, Clayton. *The Innovator's Dilemma: The Revolutionary Book that Will Change the Way You Do Business*. New York, NY: Harper Paperbacks, 2003.
- Chu, David S. C. "Refocusing the 'Roles and Missions' Debate." *Marine Corps Gazette* (November 1994): 20–25.
- Dombrowski, Peter J., Eugene Gholz, and Andrew L. Ross III. *Military Transformation and the Defense Industry after Next: The Defense Industrial Implications of Network-Centric Warfare*. Newport, RI: U.S. Naval War College Newport Papers, 2002.
- Dombrowski, Peter, and Eugene Gholz. *Buying Military Transformation: Technological Innovation and the Defense Industry*. 12–14. New York, NY: Columbia University Press, 2006.
- Ehrhard, Thomas P. "Air Force UAVs: The Secret History." Arlington, VA: Mitchell Institute Press, 2010.
- Evangelista, Matthew. *Innovation and the Arms Race: How the United States and the Soviet Union Develop New Military Technologies*. Ithaca, NY: Cornell University Press, 1988.
- Grissom, Adam, "The Future of Military Innovation Studies," *The Journal of Strategic Studies* 29, no. 5 (October 2006): 905–934.
- Horwood, Ian. *Interservice Rivalry and Airpower in the Vietnam War*. Fort Leavenworth, KS: Combat Studies Institute Press, 2006.
- Huntington, Samuel P. "Interservice Competition and the Political Roles of the Armed Services." *The American Political Science Review* 55, no. 1 (1961): 40–52.
- Kaufman, Allen, Christopher L. Tucci, and Mark Brumer. "Can creative destruction be destroyed? Military IR&D and destruction along the value-added chain." *Research Policy* 32 (2003): 1537–1554.

- Keener, J. Kristopher. "The Helicopter Innovation in United States Army Aviation." Working Paper. MIT Security Studies Program, January 2001.
- Kurtz, James H., with John H. Crerar. *Military Roles and Missions: Past revisions and Future Prospects*. Alexandria, VA: Institute for Defense Analyses, March 2009.
- Mackubin, Thomas Owens. "Conformity needs competition." *Armed Forces Journal*, June 2006.
- Michel, Marshall L., III. "*Clashes: Air Combat Over North Vietnam 1965-1972.*" Annapolis, MD: Naval Institute Press, 1997.
- Ruttan, Vernon W. "Induced Innovation, Evolutionary Theory and Path Dependence: Sources of Technical Change." *The Economic Journal* 107, no. 444 (1997): 1520–1529.
- Sapolsky, Harvey M. "Interservice Competition: The Solution, Not the Problem." *Joint Forces Quarterly*, no. 15 (Spring 1997): 50–53.
- Sapolsky, Harvey M. "The Interservice Competition Solution." *Breakthroughs* V, no. 1 (Spring 1996): 1–3.
- Sapolsky, Harvey M. "On the Theory of Military Innovation." *Breakthroughs* IX, no. 1 (Spring 2000): 35–39.
- Sapolsky, Harvey M. *The Polaris System Development: Bureaucratic and Programmatic Success in Government*. Boston, MA: Harvard University Press, 1972.
- Sapolsky, Harvey M., Benjamin H. Friedman, and Brendan Rittenhouse Green, eds. *U.S. Military Innovation since the Cold War: Creation without Destruction*. New York, NY: Routledge, 2009.
- Scherer, F. M. "Demand-Pull and Technological Invention: Schmookler Revisited." *The Journal of Industrial Economics* 30, no. 3 (1992): 225–237.

Abbreviations

CARD	Cost Analysis and Research Division
CEO	Chief Executive Officer
CUNA	Credit Union National Association
DARO	Defense Airborne Reconnaissance Office
DIMHRS	Defense Integrated Military Human Resources System
DoD	Department of Defense
IDA	Institute for Defense Analyses
JSF	Joint Strike Fighter
MIT	Massachusetts Institute of Technology
MRAP	Mine Resistant Ambush Protected
OSD	Office of the Secretary of Defense
PA&E	Program Analysis and Evaluation
QDR	Quadrennial Defense Review
SAFETY	Support Anti-terrorism by Fostering Effective Technologies
U.S.	United States
UAV	Unmanned Aerial Vehicle

REPORT DOCUMENTATION PAGE					<i>Form Approved OMB No. 0704-0188</i>	
The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.						
PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.						
1. REPORT DATE (DD-MM-YYYY) xx-06-2011		2. REPORT TYPE Final			3. DATES COVERED (From - To) Jan 2010 - Apr 2011	
4. TITLE AND SUBTITLE The Impact of Organizational Rivalry on the Defense Industrial Base: Discussion Summary				5a. CONTRACT NUMBER DASW01-04-C-0003		
				5b. GRANT NUMBER		
				5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Dominy, James R. Gould, Brandon R. Thomas, R. William				5d. PROJECT NUMBER		
				5e. TASK NUMBER AH-7-3186		
				5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Institute for Defense Analyses 4850 Mark Center Drive Alexandria, VA 22311-1882					8. PERFORMING ORGANIZATION REPORT NUMBER IDA Document D-4297	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Director, Industrial Policy Suite 15F181 4800 Mark Center Drive Alexandria, VA 22311					10. SPONSOR/MONITOR'S ACRONYM(S) Dir, IP	
					11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.						
13. SUPPLEMENTARY NOTES						
14. ABSTRACT Organizational rivalry has been an important facet of the development of the American military establishment, but there are differing views on whether such rivalrous behavior has a positive or a negative effect on the achievement of the missions assigned to the Department of Defense. This paper reports on the results of a discussion, sponsored by IDA, on the impact of organizational rivalry on the defense industrial base, and in particular on the ability of that industrial base to develop innovative solutions to the Department's requirements. The discussion brought together academic researchers and senior IDA staffers who have significant experience in the development and execution of Department of Defense programs and policies. The participants concluded that organizational rivalry does contribute to the development of innovative solutions, but some believed that the Department's current processes act to suppress such rivalries, and thereby stifle the development of such solutions.						
15. SUBJECT TERMS Organizational Rivalry, Innovation, Defense Industrial Base						
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report	18. NUMBER OF PAGES 27	19a. NAME OF RESPONSIBLE PERSON Vehmeier, Dawn	
a. REPORT	b. ABSTRACT	c. THIS PAGE			19b. TELEPHONE NUMBER (Include area code) (571) 372-6247	
Unclassified	Unclassified	Unclassified				

Reset

