

NPS-AM-10-005



ACQUISITION RESEARCH SPONSORED REPORT SERIES

**Global Cooperation and Competition in the Defense and
Aerospace Industries**

26 April 2010

by

BGen (Ret) Chip Franck, Senior Lecturer

Dr. Ira Lewis, Associate Professor

Dr. Bernard Udis, Visiting Research Professor

Graduate School of Business & Public Policy

Naval Postgraduate School

Approved for public release, distribution is unlimited.

Prepared for: Naval Postgraduate School, Monterey, California 93943



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Report Documentation Page

Form Approved
OMB No. 0704-0188

Public reporting burden for the 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 this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 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 a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

1. REPORT DATE

26 APR 2010

2. REPORT TYPE

3. DATES COVERED

00-00-2010 to 00-00-2010

4. TITLE AND SUBTITLE

Global Cooperation and Competition in the Defense and Aerospace Industries

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Naval Postgraduate School, Graduate School of Business & Public Policy, 555 Dyer Road, Room 332, Monterey, CA, 93943

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

A number of major changes in the international aerospace market continue they will likely have major impacts on global defense and aerospace commerce. These developments include the following �� **With the increase in complexity and cost of aerospace systems, it is much more difficult to reconcile the "natural" size of firms within national borders.** �� **Government policy to reconcile the need for "affordability" of defense goods with national sovereignty leads to increasingly hard choices.** �� **The aerospace industry is becoming increasingly globalized.** �� **Advances in information technology continue to offer new technical possibilities.** �� **Consolidation, and shakeout, of defense industrial firms means only a few potential bidders for projects. Accordingly, both governments and aerospace firms have made or are discussing changes to policies, strategies, and modes of operation to adapt to their changing environment. Our current research investigates the effects of these trends on the European and US defense industrial bases. We consider the following cases** �� **EADS problems with engine software development and other issues associated with the A400M development** �� **The Nordic defense bloc that's emerging (or maybe not), and** �� **An exploration of the government side of the KC-X procurement saga the "quarrelsome committee," with Allison's Model III (governmental politics).** �� **Our results, in a nutshell, are as follows** �� **The A400M difficulties are the unsurprising results of curious behavior with attendant difficulties for participating nations.** �� **A pattern of Nordic defense cooperation is in place, but it's not yet clear that a Nordic defense bloc is emerging.** �� **The KC-X difficulties demonstrate the limitations of the "sovereign monopsonist" model of the demand side of defense. In the matter of the KC-X procurement attempts, we conclude Model III works better**

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 131	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

The research presented in this report was supported by the Acquisition Chair of the Graduate School of Business & Public Policy at the Naval Postgraduate School.

To request Defense Acquisition Research or to become a research sponsor, please contact:

NPS Acquisition Research Program
Attn: James B. Greene, RADM, USN, (Ret)
Acquisition Chair
Graduate School of Business and Public Policy
Naval Postgraduate School
555 Dyer Road, Room 332
Monterey, CA 93943-5103
Tel: (831) 656-2092
Fax: (831) 656-2253
e-mail: jbgreene@nps.edu

Copies of the Acquisition Sponsored Research Reports may be printed from our website www.acquisitionresearch.org



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Abstract

A number of major changes in the international aerospace market continue; they will likely have major impacts on global defense and aerospace commerce.

These developments include the following:

- With the increase in complexity and cost of aerospace systems, it is much more difficult to reconcile the “natural” size of firms within national borders.
- Government policy to reconcile the need for “affordability” of defense goods with national sovereignty leads to increasingly hard choices.
- The aerospace industry is becoming increasingly globalized.
- Advances in information technology continue to offer new technical possibilities.
- Consolidation, and shakeout, of defense industrial firms means only a few potential bidders for projects.

Accordingly, both governments and aerospace firms have made or are discussing changes to policies, strategies, and modes of operation to adapt to their changing environment. Our current research investigates the effects of these trends on the European and US defense industrial bases.

We consider the following cases:

- EADS problems with engine software development and other issues associated with the A400M development,
- The Nordic defense bloc that’s emerging (or maybe not), and
- An exploration of the government side of the KC-X procurement saga, the “quarrelsome committee,” with Allison’s Model III (governmental politics).
- Our results, in a nutshell, are as follows:
- The A400M difficulties are the unsurprising results of curious behavior, with attendant difficulties for participating nations.



- A pattern of Nordic defense cooperation is in place, but it's not yet clear that a Nordic defense bloc is emerging.
- The KC-X difficulties demonstrate the limitations of the "sovereign monopsonist" model of the demand side of defense. In the matter of the KC-X procurement attempts, we conclude Model III works better.

Keywords: International aerospace industry, global defense, aerospace commerce, A400M, sovereign monopsonist, KC-X, Model III



About the Authors

Raymond (Chip) Franck, PhD, Senior Lecturer, Graduate School of Business & Public Policy, Naval Postgraduate School, retired from the Air Force in 2000 in the grade of Brigadier General after 33 years commissioned service. He served in a number of operational tours as a bomber pilot; staff positions, including the Office of Secretary of Defense and Headquarters, Strategic Air Command; and served as Professor and Head, Department of Economics and Geography at the US Air Force Academy. His institutional responsibilities at NPS have included the interim chairmanship of the newly formed Systems Engineering Department (July 2002 to September 2004), serving as Associate Dean for Academic Operations (December 2007 to present), teaching a variety of economics courses, and serving on a number of committees to revise curricula for both the Management and Systems Engineering disciplines. His research agenda focuses on defense acquisition practices and military innovation.

Raymond (Chip) Franck
Senior Lecturer
Graduate School of Business & Public Policy
Naval Postgraduate School
Monterey, CA 93943
Phone: (831) 656-3614
E-mail: refranck@nps.edu

Ira Lewis, PhD, is Associate Professor of Logistics, Graduate School of Business and Public Policy, Naval Postgraduate School, Monterey, CA. His interests include transportation, public policy, and the international defense industry.

Ira A. Lewis
Associate Professor
Graduate School of Business & Public Policy
Naval Postgraduate School
Monterey, CA 93943
Phone: (831) 656-2464
E-mail: ialewis@nps.edu



Bernard Udis, PhD, is Professor Emeritus of Economics at the University of Colorado at Boulder and Visiting Research Professor at the US Naval Postgraduate School. He has also served as Distinguished Visiting Professor of Economics at the US Air Force Academy and as a William C. Foster Fellow at the US Arms Control & Disarmament Agency. His NATO Research Fellowship examined the costs and benefits of offsets in defense trade.

Professor Udis' published work includes three books: *The Economic Consequences of Reduced Military Spending* (editor, 1973), *From Guns to Butter: Technology Organizations and Reduced Military Spending in Western Europe* (1978), and *The Challenge to European Industrial Policy: Impacts of Redirected Military Spending* (1987). In addition, he has published numerous articles in scholarly journals on defense industries and military power. These include *Offsets as Industrial Policy: Lessons From Aerospace* (with Keith Maskus, 1992), and *New Challenges to Arms Export Control: Whither Wassenaar?* (with Ron Smith, 2001). A number of his works are considered classics in defense economics and have been reprinted in collections such as *The Economics of Defence* (2001) and *Arms Trade, Security and Conflict* (2003).

Professor Udis' current research focuses on competition and cooperation in the aerospace industries of the US and the EU.

Bernard Udis
Professor Emeritus, University of Colorado
13 Camino Real
Sandia Park, NM 87047
(505) 286-2789
E-mail: Bernard.Udis@colorado.edu



NPS-AM-10-005



ACQUISITION RESEARCH SPONSORED REPORT SERIES

**Global Cooperation and Competition in the Defense and
Aerospace Industries**

26 April 2010

by

BGen (Ret) Chip Franck, Senior Lecturer

Dr. Ira Lewis, Associate Professor

Dr. Bernard Udis, Visiting Research Professor

Graduate School of Business & Public Policy

Naval Postgraduate School

Disclaimer: The views represented in this report are those of the author and do not reflect the official policy position of the Navy, the Department of Defense, or the Federal Government.



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

Table of Contents

I.	Introduction	1
II.	The KC-X Selection Process: Understanding the Quarrelsome Committee.....	2
A.	Essentials of Model III	4
C.	Srebrenica, 1995: A Case of Dysfunctional Action Channels	12
B.	Using Model III as an Explanatory Paradigm.....	16
C.	Trying Out Model III with the KC-X Saga.....	17
D.	First Episode: The KC-767 Leasing Initiative.....	18
E.	Second Episode: The KC-45 Competition of 2007-2008.....	21
F.	Third Episode: The Current Competition	25
G.	Closing Observations on the KC-X Affair and Quarrelsome Committees	31
III.	Airbus and Development of the A400M.....	34
A.	Introduction.....	34
B.	A Unique Acquisition Process	36
C.	The Engine: Unsurprising Results of Curious Behavior.....	37
D.	The FADEC Saga.....	39
E.	The United Kingdom: Pulled in Too Many Directions	41
F.	Conclusion.....	44
G.	Postscript.....	47
IV:	The Nordic Nations: An Emerging Defense Bloc?	48
A.	Recent Developments	55
	Nordic Council.....	55
	Nordic Supportive Defense Structures	56



The Stoltenberg Report and Recommendations 57

B. Nordic Interviews 68

C. One Tentative Generalization 97

V. Concluding Thoughts 98

Appendix 1. Srebrenica Massacre Timeline 100

List of References 104



I. Introduction

This is the third report from our project to better understand the evolving international-defense industrial base. We've pursued two basic aims:

- First, to better “map the terrain” in the international defense marketplace, which is steadily becoming more complex, and
- Second, to consider the utility of various perspectives in understanding the forces driving the changes in that industrial base.

As a starting point, we undertook to study the interactions between the US and Europe (primarily European Union (EU) and North Atlantic Treaty Organization (NATO) members). Well into this project, we're still considering transatlantic defense industrial affairs “across the pond.” Chapter II considers the KC-X saga, which has consumed pretty much the entire first decade of the 21st century. It has also been a major theme in our ongoing research project. In previous reports, we've considered the EADS strategy to enter the North American defense market (the KC-30 candidate for KC-X being a major part of that strategy). In our second report, we considered the KC-X (or KC-45) competition between EADS (with its partner Northrop Grumman, NG) and Boeing, covering the major events of the competition from the original Request for Proposal (RFP) through the contract award to NG-EADS in February 2008, which included the Boeing protest, the GAO's decision sustaining that protest, and the DoD's abortive attempt to quickly re-compete the project. Among other things, we concluded that the government side of the affair was better described by “quarrelsome committee” than by the traditional notion of the “sovereign monopolist.” In this report, we give Graham Allison's Model III (governmental politics) a preliminary test-drive as a paradigm for understanding the operations of the quarrelsome committee that has presided over the KC-X Affair.

Chapter III considers the difficulties that have attended the development of the Airbus A400M military transport aircraft—primarily the engines. Among other things, it's an interesting complement to our previous research about the difficulties



encountered in the development of the Boeing 787 “Dreamliner” commercial transport. As we’ve noted in previous reports, the scale and expense of major weapons systems frequently exceeds the capacity of firms, and also nation-states. Among other things, this means that technical complexity has been accompanied by management complexity—at a number of levels. These include management of technology (or systems engineering), of integrating complex systems, and of systems-of-systems. They also include the management of complex systems of partnerships among coalitions of firms and defense establishments. The Boeing 787 experienced difficulties in the management of an extensively outsourced development project and a complex supply chain. In the case of the A400M, the political choices made by the nations (and sponsors) drove the choice of a local engine—developed by a pickup team of European firms. The result was extensive delays that have been costly in a number of ways. Basically, the political imperatives associated with managing the A400M manifested themselves in the technical difficulties involved in developing the engines.

Chapter IV takes, we think, a fresh look at the maybe-emerging Nordic defense bloc. The Nordic powers are making a number of serious and successful efforts to enhance cooperation among their militaries—with varying degrees of success. But, will the natural attractions of geography, common culture, and common interests overcome the simultaneous attractions of nationalism and outside partners? This tension has, *inter alia*, manifested itself in the competition between the Swedish Viggen and the American Joint Strike Fighter as the next-generation Multi-role Combat Aircraft (MRCA). In our research, we’ve been fortunate to have received generous cooperation from a number of international respondents (promised anonymity). They’ve provided valuable, inside information about both the attractive and centrifugal forces that affect the Nordic players. Whether the Nordic



group turns out to be a nascent defense bloc, or just a dead end, we believe the directions that Nordic defense establishments take will have significant implications for defense industrial affairs on both sides of the Atlantic.

Finally, Chapter V offers some concluding thoughts..



THIS PAGE INTENTIONALLY LEFT BLANK



II. The KC-X Selection Process: Understanding the Quarrelsome Committee

Long before the tanker decision, the contest has taught us several lessons—and so far, they are all a bit disappointing. Pierre Sparaco (2010, p. 51)

In a previous report (Franck, Lewis & Udis, 2008b), our discussion of the KC-45 (KC-X, competition, protest, and aftermath) concluded with a question about the behavior of the US Government throughout the affair. We offered the conclusion that the government resembled a quarrelsome committee more than the sovereign monopsonist of more traditional models of defense procurement. This part of our report will explore this question in more depth. In particular, we'll consider the explanatory power of Graham Allison's Model III (government politics) for three episodes in the regrettably long history of efforts to replace the USAF KC-135 aerial tanker fleet (Allison, 1971; Allison & Zelikow, 1999).

The sovereign monopsonist model views the defense marketplace as being dominated by a single buyer, who makes purchases in a competitive marketplace and who can also set the rules of the game. This would make, for example, the US DoD very powerful in the defense marketplace—given that one-buyer role and the importance of the US as a customer for defense hardware. In 1973, an Aerospace Industries Association (AIA) paper offered the following picture: “A single buyer is in the position of conducting parallel negotiations with several highly competitive sellers, each of whom [...] is desperately eager to win the award” (p. 26). The report then goes on to enumerate a number of ways in which this monopsony power can be, and has been, exploited.

However, times have apparently changed, at least partly. In the case of the new Air Force tanker, there are only two serious contenders—Boeing and NG-EADS. Also, the US Government appears to have devolved from being more of a unitary actor in source selections to something of a “quarrelsome committee”



(Franck, Lewis & Udis, 2008b). With the changes on both sides of the market for aerial tankers, there have been events not explained well (if at all) by the sovereign monopsonist model. A rival paradigm is Allison's Model III.

Model III is one of three analytical constructs used by Allison to explain the events, and results, of the Cuban Missile Crisis of 1962 (Allison, 1971; Allison & Zelikow, 1999). Model I undertakes to explain government policy-making with a unitary, rational actor as the central unit of analysis. Model II focuses on intra-governmental (bureaucratic) explanations, focusing primarily on agency repertoires. Model III focuses on government action as the “resultant”¹ of intra-governmental politics—interagency “pulling and hauling” in the course of policy deliberations. While Model III focuses on interagency politics, it also pays close attention to key individuals (“players in positions”).²

A perhaps distinctive perspective of Model III is that the policy outcomes (“resultants”) of governmental politics may, but may not, be a reflection of the preferences of the individual players. “Sometimes one group committed to a course of action triumphs over other groups fighting for other alternatives. Equally often, however, different groups pulling different directions produce a result [...] distinct from what any person or group intended” (Allison & Zelikow, 1999, p. 257).

¹ Allison's “resultant” seems an awkward, perhaps contrived, term. We'll use “outcome” as being synonymous in this report.

² The old saying “where you stand depends on where you sit” implies that position determines the actions of the player. Allison and other Model III advocates would be more likely to adhere to a proposition like “where you sit is one factor that determines where you stand—perhaps the largest factor.”



A. Essentials of Model III

1. Organizing Concept

Explanations from Model III involve a certain set of questions that shape the analysis, which specifically include the following:

- Who plays? This could be agencies (or groups), or individuals.
- In what contexts are the players operating?³ “Context” could arise from a number of factors. These include the following:
 - The players’ past history (with lessons learned and baggage accumulated).
 - Various players’ views of the issue at hand, importance assigned to the issue. In general, a higher degree of commitment increases a player’s ability to influence the outcome.
 - Other issues currently on the player’s “radar.” The standard Model III view of the world assumes that situations under analysis are but one of many items on the players’ calendars. These other issues can influence perceptions and actions. For example, other issues can distract players. Also, other issues in play could suggest opportunities for log-rolling—trading support for another player’s preferred outcome for Issue B in exchange for support with Issue A.
 - The relative bargaining power the player brings to the game.
- What does the playing field look like? Who gets to play? What conventions govern interactions among players?⁴ What is the admissible set of outcomes? What are the decision rules?⁵ That is,

³ Keeping in mind that a “player” might be a key individual, agency, or an agency led by a key individual.

⁴ For example, a convention that governs interactions among drivers of automobiles is based on the center line of a two-lane road. Everyone understands that one drives to the right (or left) of the center line.

⁵ Again we find terminology that differs from, say, standard economics. In Model III, a “decision rule” is, in a very real sense, a termination condition for the game. In economics and decision theory, decision rules prescribe certain actions as a result of circumstances encountered. The organization taking action in accordance with the wishes of the majority of the decision-makers is an example of a



how do the players get to a decision, and how do they know they've reached it?

B. The Model III View of the World

The discussion immediately following presents some essentials of the Model III perspective—without capturing all of its subtleties. We'll present the “pulling and hauling” through a simple analogy, and discuss the basic determinants of the outcomes.

In Model III, the players engage in a process involving a mix of conflict and cooperation, after which they must arrive at a conclusion (“resultant”). The extent to which any one player influences the outcome depends on (a) all of the players' preferred outcomes (positions), (b) their commitment to their positions, and (c) the amount of “power” any given player brings to the situation.

1. Candidate Outcomes

a. Players' Preferred Outcomes

Let's suppose that there are two players, A and B, whose preferred policies are represented in Figure 2a below. Those preferred policies are presented as chosen directions only (not as vectors with both direction and magnitude).⁶ In this case, let's suppose that A prefers to head in a northeasterly direction, while B prefers the northwest. Using a sort of vector sum representation, one would suppose that the final result would be a direction somewhere between northeast and northwest—i.e., as represented by the triangle KLM. In keeping with the Model's tenets, the direction resulting from the interaction between A and B can easily be one that neither player intended—or particularly wanted. It's safe to predict some

decision rule in Model III. “Increase production as long as added revenue covers added costs” is an example of a decision rule in economics.

⁶ It would, of course, be possible to represent the players' positions as having both direction and distance assigned to them, but that would make representing the effects of relative commitments and relative power intractable in two dimensions.



movement in a northerly direction in this case; however, east-west movement may be easterly, westerly, or nothing.

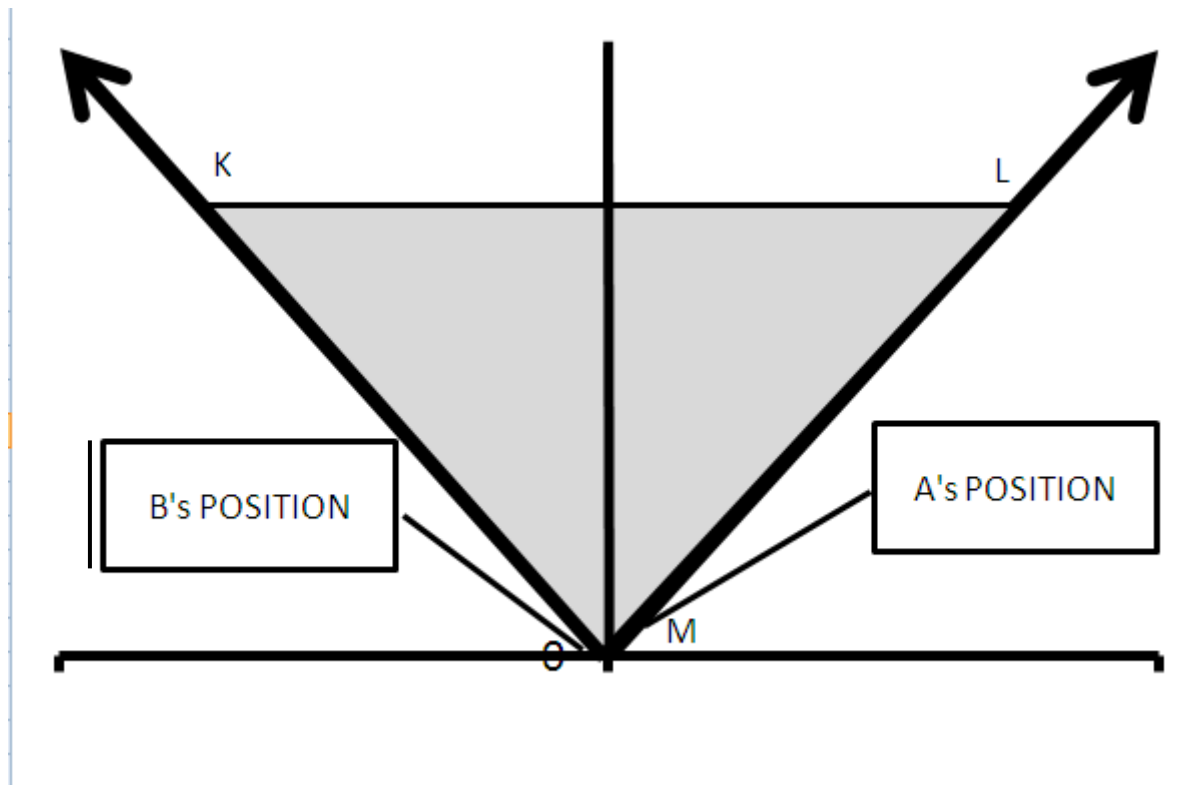


Figure 2a. Model III Representation of Players' Original Positions and Possible Outcomes

2. Degrees of Commitment

We can then add the aspect of commitment. If, for example, Player B is more committed to his position than A, Model III predicts that B will influence the result more than A. In Figure 2b, we represent A's greater commitment by drawing vectors for each player, starting at the origin (or *status quo*)—A's preference (position) is movement toward the northeast, and B's toward the northwest, with B's being of greater magnitude. We would then expect the resulting direction to be closer to the northwest. For example, Secretary of Defense Robert Gates signaled commitment by announcing his intention to (figuratively) throw himself "on the tracks" in

opposition to a proposal for dual procurement of new aerial tankers (DiMascio, 2009; Shalal-Esa, 2009, April 19).

We generalize somewhat the idea that the degree of commitment influences outcomes in Figure 2b, which plots outcome as a function of B's relative commitment. If B has no commitment, then it's natural to expect that A's position would determine the outcome. As B's commitment increases, then the outcome can be expected to more closely reflect B's position. (The graph in Figure 2c shows outcome converging asymptotically to B's position as B's commitment increases, or A's decreases.)

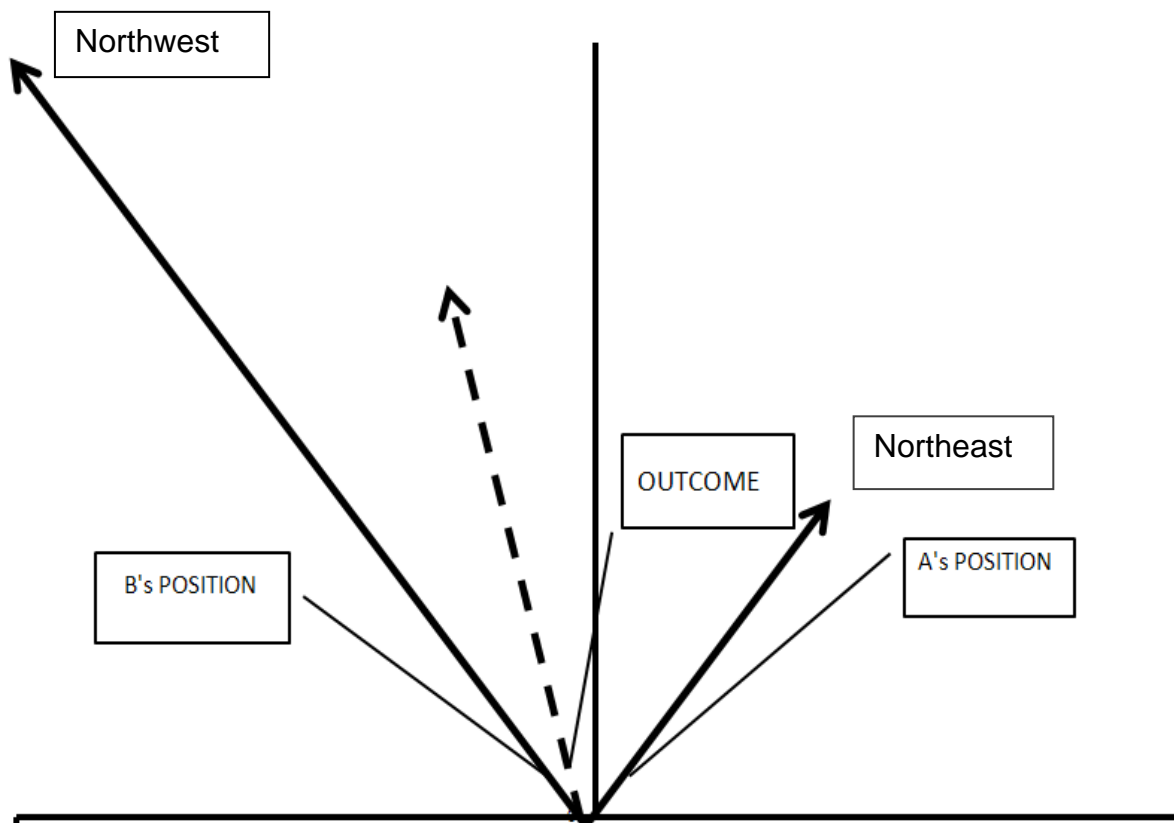


Figure 2b. Outcome When Player B is More Committed than A



3. Relative Power

Another factor is the relative power of the players—power being understood as having both general and situational components. Players' power depends on position; so the office of President of the US confers considerable power in any situation involving government politics. Thus, for example, President Obama invoked the power of his office when threatening to veto any defense bills that included funding for continued F-22 production.⁷ In general, a Model III theorist views “power” as a function of (a) bargaining advantages brought to the table, (b) the ability to use those advantages, and (c) other players' perceptions of the first two dimensions of power (Allison & Zelikow, 1999, p. 300).

Figure 2d is presented under the supposition that power can be regarded as relative to that of the other players. In the figure, we show outcome as a function of B's share of power. If A has all the power and B has none, then A's position (northeast) is the outcome. If B has all the power, then B's position (northwest) is the outcome.

What clearly emerges from our view of Model III are the outcomes of governmental political processes: (a) the players at the table jointly shape the outcome; (b) their influence in determining that outcome varies for a number of reasons, including degree of commitment to the issue at hand and relative power positions at the time; and (c) the outcome may well be something that none of the players advocated. As Allison and Zelikow (1999, p. 256) put it: “Sometimes one group [...] triumphs over other groups fighting for other alternatives. Equally often,

⁷ The Administration has had a number of differences with the Congress over defense acquisitions. These have received widespread press coverage, such as Goldman (2009) and Shalal-Esa (2009, September 8).



however, different groups pulling in different directions produce a result [...] distinct from what any person or group intended.”⁸

⁸ It's indeed possible that one group will get its way; for example, the Administration's position prevailed (without any obvious compromise) in the matter of F-22 production, which terminated at 187 airframes (barring major reversals of fortune). Our explanation of Model III allows for one player completely “winning” only as a limiting case. Our discussion has a continuous, “splitting the difference” set of assumptions. However, if the choice is between discrete alternatives, then one player may indeed get exactly what he wants.



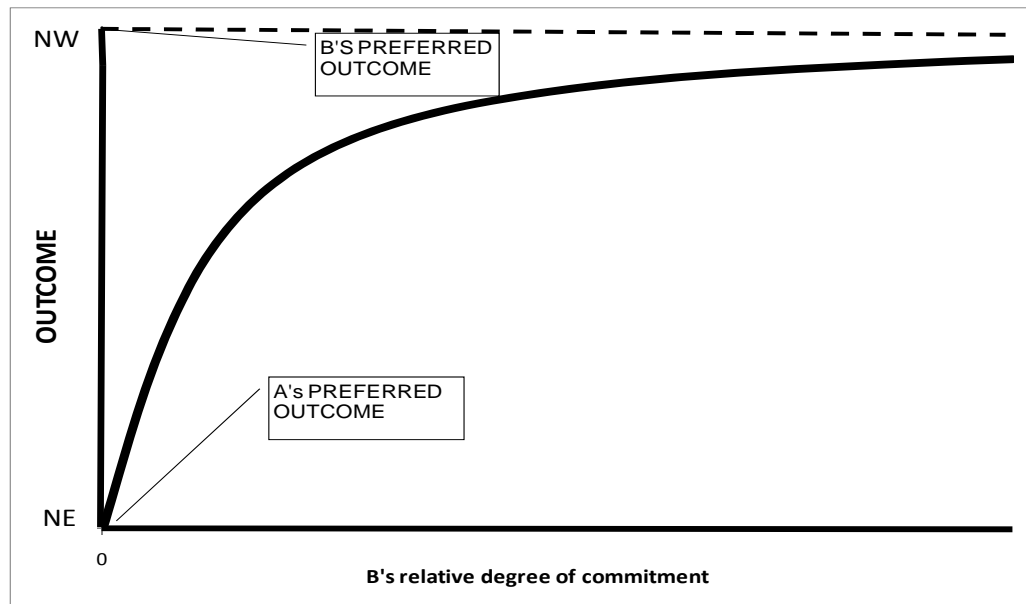


Figure 2c. Outcome versus Degree of Commitment

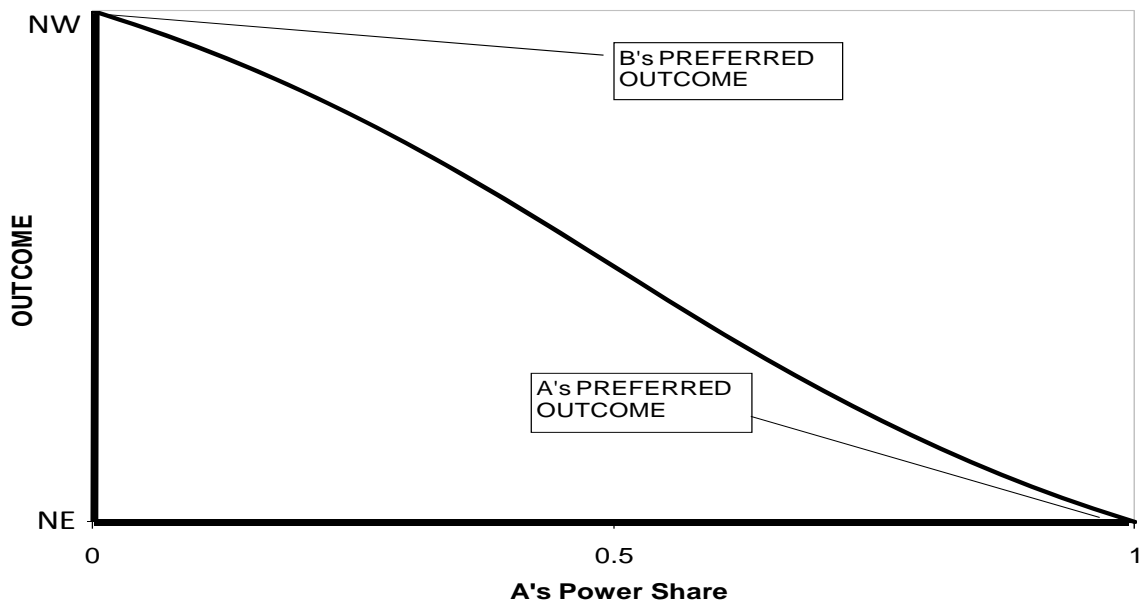


Figure 2d. Outcome versus Relative Power



4. The “Infrastructure” of the Game

What’s also important in Model III analysis is the “game” itself.⁹ The game itself can be understood by answering the following questions:

- What are the “action channels”? Basically, Model III assumes established means of entry into the game (determining who has legitimacy as a player). “An action channel is a regularized means of taking governmental action on a specific kind of issue” (Allison & Zelikow, 1999, pp. 300-301).
- What are the “rules of the game”? This is a related question. To a significant extent, “rules” and positions determine who can be a legitimate player, relative power among players, and how things do (or should) get done. The rules of the game may be thought of as a commonly understood set of conventions that form the action channels, and perhaps constrain the range of legitimate outcomes. That said, the set of rules in the arena of government politics may be stable or changing, perhaps constantly changing (Allison & Zelikow, 1999, p. 302).

While Allison and Zelikow advocate well-organized action channels, they note that they can be very noisy. The noise can originate from misplays caused by misperceptions and outright errors; it can also originate from the complexity of the action channel, particularly those with many players and consensus-requiring decision rules (Allison & Zelikow, 1999, Chapter 5, esp. pp. 278-280). It is reasonable to infer that Allison and Zelikow advocate action channels that are well- (but not over-) organized and decision rules that facilitate (but not over-facilitate) reaching a decision (from Allison & Zelikow, 1999, pp. 265-271).

⁹ It’s useful to distinguish the idea of a “game” as presented by Allison, and “game” as understood by a game theorist. Allison views a game that’s well structured as being desirable (within reason), while game theorists take a “game” being *very* well structured as an assumption.



C. Srebrenica, 1995: A Case of Dysfunctional Action Channels

Allison and Zelikow (1999) and others point out the advantages of well-organized and functional action channels. A reasonable test of the usefulness of action channels is whether they lead to decisions that are both effective and timely. The processes that were in place for the Srebrenica Affair are a near-perfect example of dysfunctional decision-making processes.

In April 1993, the UN and NATO responded to Serb offensives in Bosnia by declaring “safe areas” for Bosnians, especially Muslims, in selected locations such as Srebrenica. In early July 1995, Serb forces assaulted and took the town, murdering at least 7,000 Muslim men. Especially appalling was that those organizations and nations that had pledged to protect Srebrenica did essentially nothing to prevent the murders—even though Serb actions and intentions were plain to all concerned parties.

Allison and Zelikow (1999, pp. 290-294) provide a summary narrative of the affair as part of their discussion of Model III methodology. What’s useful about revisiting the case is that it serves as a stark illustration of the consequences of complex, poorly organized action channels. A disclaimer is in order. Our purpose here is not to provide a careful study, or even a complete account, of the Srebrenica Massacre. We intend to focus on a few accounts of the Srebrenica Affair as a near-perfect example of dysfunctional decision-making processes (action channels). A simplified narrative starts in April 1993,¹⁰ with the UN declaring Srebrenica a safe area. There was, however, a fundamental disconnect between UN and NATO aims and the resources the participating countries were willing to devote to the mission (“under-resourced,” to use a currently fashionable term). As a result, the safe areas

¹⁰ A chronology of the Srebrenica Affair (from PBS) is available in Appendix 1. Our main focus here is the NATO/UN decision-making process (the action channel).



were isolated and dependent upon the goodwill of the occupying Serb army for the flow of supplies—to both the United Nations Protection Force (UNPROFOR) troops assigned and the refugees in those safe areas.¹¹

The arrangement started to come apart in early 1995, as Serb forces undertook an offensive in Bosnia with an aim of expelling Bosnian Muslims (“ethnic cleansing”). As a result, the safe areas, including Srebrenica, came under increasing pressure. This led to the first decision opportunity. The UNPROFOR Commanding Generals, former Yugoslavia and Bosnia, concluded the current situation was untenable and proposed that UN forces be (a) significantly reinforced, or (b) withdrawn to more defensible positions. The generals briefed the UN Security Council. The proposal was effectively vetoed by the US Ambassador to the UN, Madeline Albright, presumably on instructions from her Government. The US position was that the current situation was untenable, but withdrawals were unacceptable; the US proposed air strikes as an alternative (Allison & Zelikow, 1999, pp. 291-292).

That alternative was indeed tested when Serb forces began a serious assault on July 5, 1995. The commander of the Dutch UNPROFOR troops in Srebrenica requested air strikes. The requests made their way through the established approval chain (action channel)—described by Allison and Zelikow as a “gauntlet.” The local commander’s request was first routed through the sector headquarters (Tuzla), then regional headquarters (Sarajevo, Bosnia), and, finally, headquarters for UN forces in former Yugoslavia (Zagreb). At Zagreb, air-strike requests were reviewed by the military commander and a UN civil servant—subject to consulting with UN Secretariat (New York). If approved in Zagreb, the request would then be

¹¹ A Model I (microeconomic) theorist would hypothesize this came about as public goods problem – in which all parties concerned wanted safe areas but were (in aggregate) unwilling to commit the necessary resources to make them viable. A Model III (governmental politics) theorist would look to the action channels, especially the decision rules, for explanations.



forwarded to NATO for approval by the treaty organization and the governments whose air forces would execute the strikes.

The multi-layered process was clearly prone to delays and poor communications between command echelons. Both flaws were demonstrated on July 10 when the Dutch commander at Srebrenica requested air strikes. Despite staff recommendations for an immediate strike, the UNPROFOR commander at Zagreb chose to include the Dutch government and the regional headquarters at Sarajevo in further consultations. After a delay of three hours, the UN forces threatened an air strike for the following day, if the Serb forces continued their attack on Sarajevo. The forces in Srebrenica were not informed of the UN decision and expected air strikes to commence at dawn on July 11. Thus, the Dutch troops in Srebrenica began the daylight hours awaiting air strikes, while UN headquarters was awaiting on-scene reports of Serb attacks. The communications problem was resolved later that morning, but the strike aircraft that were launched for dawn strikes were out of fuel and could not complete their missions.

This necessitated yet another request for air strikes, which was approved about noon. By then, it was much too late. A total of two bombs, hampered by poor weather, were actually delivered around 1430 against the Serb forces. The strikes were aborted soon after because the Serbs employed their well-established counter to the air strikes, taking UNPROFOR troops as hostages and threatening to kill them.

In the context of Model III, what are we to make of this perfect storm of ineffectiveness? First, it seems safe to assume that everyone (except the Serb Government) was willing to take drastic measures to avoid the actual results—a genocidal massacre on a scale unprecedented since World War II. That is fully consistent with a Model III perspective; courses of action actually undertaken are frequently unrelated to the preferences of any of the players. In this rather extreme case, nothing useful was done by the NATO or UN organizations, despite all the players agreeing that effective action was imperative.



Second, it would appear that the relevant action channels were designed to be ineffective.¹² The UN action channels that dealt with the UNPROFOR requests operated in a timely manner (in this instance) but were vulnerable to vetoes. One strongly worded dissent (voiced by the US Government) was sufficient to scuttle the entire scheme. It appears that the relevant decision rule required a consensus with affirmative votes (or perhaps abstentions) by the players with veto powers.¹³ In this case, the US Government rejected two alternatives to the status quo, without having to demonstrate the merits of its air-strike proposal.

Third, action channels become noisy through mistakes. A UNPROFOR official's insistence upon using the proper form for an urgent air-strike request has the appearance of an egregious error. The effect of this delay certainly added uncertainty (noise) to the situation of all those directly involved in the assault on Srebrenica. Likewise, the communication breakdown the morning of July 11 is another large input of noise due to a mistake. (There appears to have been a command and control mistake of the first order by the command center at Zagreb for not having tested its communications channels and gotten a situation report from Srebrenica prior to dawn on July 11.)

Fourth, the action channels matter. While the Model III world is full of noise, complexity, and uncertainty, well-designed action channels can reduce all that, and they are more conducive to more sensible results. "Well-designed" action channels include decision rules likely to lead to an agreed-upon course of action in a timely manner. The action channels in this case were cumbersome and promoted noise and uncertainty; they also offered entry points and multiple opportunities for veto-wielding players who wished to object to any particular policy.

¹² This is admittedly a Model I perspective. A Model III hypothesis is that the action channels described above were cobbled together after extensive negotiations and compromises. The result was ineffectiveness—even if no one intended that to be the result.

¹³ A Model I prediction would have an assessment of all three alternatives (status quo, reinforcement, withdrawal), with the best (or least bad) alternative chosen.



Finally, while Allison and Zelikow (1999, esp. pp. 268-271) discuss the advantages of well-designed action channels, the NATO and UN channels relevant to the Srebrenica Affair bear strong resemblance to the action channels in place to the KC-45 source selection process: poorly defined, many ports of access for *ad hoc* players, and needing consensus (or unanimity) in order to reach a decision.

D. Using Model III as an Explanatory Paradigm

As we understand Allison and Zelikow's description, there is no universally agreed-upon approach to using Model III methods to analyze any specific situation.¹⁴ That said, we'll simplify a bit and offer the following guidelines for doing analysis with Model III.

1. Basic Perspective

Governmental action is a political "resultant" of the interactions of various players.

- Fully identify the players.
 - Who are they?
 - In what contexts do they view the game? What priorities, individual perceptions, goals and interests, other schedule demands, and issue frames do they bring to the game?
 - What determines players' impacts on the outcome? What is the player's commitment to his preferred outcome? What bargaining power does she have?
- Proceed with the Analysis.
 - Describe the issue(s) and the players' roles.

¹⁴ This is in no sense a criticism. Among other things, it reflects the inherent complexity of the methodology.



- Describe the game’s structure, to include action channels, applicable rules and norms, and patterns of interaction among the players.
- Describe the result, as determined by the interactions among the players.¹⁵

E. Trying Out Model III with the KC-X Saga

As noted above, we have previously offered an assessment that the behavior of the US government in the KC-X competition has more closely resembled a quarrelsome committee than a sovereign monopsonist¹⁶ of more traditional defense acquisition analyses (Franck, Lewis & Udis, 2008b, p. 35).

This section undertakes a tentative and preliminary Model III analysis of three episodes associated with various attempts by the Air Force to start modernization of its aerial refueling fleet by replacing KC-135s. The first episode is about the tanker leasing initiative through 2006. The second concerns the formal competition between the KC-767 (Boeing) and KC-30 (EADS-Northrop Grumman, NG), from early 2007 to late summer 2008 (when the competition, under revised rules, was cancelled following Boeing’s successful protest of the contract award to the KC-30 team). The third is about the ongoing re-competition between Boeing and NG-EADS.

Our discussion will be necessarily preliminary and tentative because we rely only on published documents and press reports. According to standard Model III assessments, these sources reflect the course of play or a negotiated outcome. Such information is “secondary.” A really good source of information would be candid, synoptic accounts from major participants in the events.¹⁷ Failing that, a

¹⁵ This discussion of method is a summary of Allison and Zelikow, Chapter 5, esp. pp. 298-312.

¹⁶ In Allison’s classification scheme, “sovereign monopsonist” is a Model I (unitary, rational actor) perspective.

¹⁷ The *Ciano Diaries* (1946) constitute a reasonably good example of candid, synoptic accounts by a major participant. However, candid, synoptic revelations are now routinely used against the



good second-best source is field interviews that are performed reasonably soon after the game is over (or while it's still in progress) with key players. In this method, "What is required, ideally, is access by an analyst [...] to a large number of the participants in the decision before their memories fade or become too badly discolored. *Such access is uncommon*" (Allison & Zelikow, 1999, p. 312, emphasis added).

Standards for Model III evidence indicate the difficulty in doing a full-up Model III analysis (a matter to which we'll return later). Measured against those standards, the information we bring to the discussions below is clearly not the most reliable. However, our sources will serve our immediate purpose: to explore and (tentatively) assess the utility of Model III as a way of systematically studying the "quarrelsome committee" that seems to have been in place throughout the KC-X Affair.

F. First Episode: The KC-767 Leasing Initiative

1. Players and Contexts

The three most publicized players (and probably the most influential) in this episode were Ms. Darleen Druyun (a high-ranking Air Force official), Dr. James G. Roche (Secretary of the Air Force), and Senator John S. McCain.

Darleen Druyun (b. 1947) was Principal Deputy Assistant to the Assistant Secretary of the Air Force for Acquisition and Management. She began her civil-service career in 1970 as a contract and procurement manager in the Air Force—rising to the Senior Executive Service. Following federal service that also included assignments at the OMB and NASA, she was appointed in 1993 to the post she held at the time of the leasing initiative (US Air Force bio, 2001).

authors—even decades later. It's reasonably safe to say that this stream of literature has effectively dried up in contemporary American public life.



James Roche (b. 1939) retired from the US Navy at the rank of Captain after 23 years of service in 1983. His career in the Navy included command of a guided missile destroyer, and assignments in the OSD, the State Department, and the staff of the Senate Armed Services Committee. Prior to his appointment as Secretary of the Air Force on January 20, 2001, he was employed by Northrop Grumman in a variety of management and executive positions (US Air Force bio, 2004).

John S. McCain (b. 1936) also served in the US Navy for 23 years, retiring in 1981 at the rank of Captain. He was a naval aviator and prisoner of war in North Vietnam from October 1967 to March 1973. Following his release, his naval assignments included command of a naval air training squadron and liaison duties with the US Senate. He was elected to the US House of Representatives from Arizona in 1982 and to the US Senate in 1986. His 1980s association with Charles Keating (one of the Keating Five) seems to have been a formative experience of his political career—in which he became known as an independent player, especially concerned with ethical conduct. Among other things, he was a major sponsor and advocate for campaign-reform legislation (*McCain–Feingold Act*). These concerns seem also to have influenced his behavior in the tanker leasing initiative.¹⁸

2. The Course of the Game (In Brief)

From the Air Force perspective, there was a reasonable case for the KC-767 leasing arrangement. While there was good reason to believe that the bulk of the KC-135 fleet could be kept flying for an extended period of time, there were increasing indications that doing so could be both expensive and risky.¹⁹ By acquiring some new tankers, the Air Force was able to retire the least-modern KC-

¹⁸ Wikipedia has a well-detailed and documented article on Senator McCain's background. There is also a short biography at the US Senate website.

¹⁹ One of the earlier expressions of doubt came from the GAO in 1996, *GAO/NSIAD-96-160*. Gertler (2009, pp. 88-91) has recently summarized discussions of this issue. Gertler (pp. 3-4) also notes that increased flying operations post September 11, 2001 have increased the importance of the tanker-aging issue.



135s (the E models) and provide a warm production line as a hedge against major failures (or major increases in support costs) among the remaining KC-135 inventory (R models).

As part of the *Defense Authorization Act of 2002*, the Air Force was authorized to lease 100 aerial tankers for the purpose of retiring KC-135Es. During Fiscal 2002, the Air Force chose the KC-767 (over the Airbus KC-30). (Italy and Japan had already chosen KC-767 aerial tankers.) In 2003, a leasing contract for 100 KC-767s (\$20 billion) was awarded to Boeing. Shortly thereafter, this initiative attracted considerable criticism from the legislative branch, especially Senator McCain. The critics' case was based primarily on the advisability (or not) of leasing aircraft in a highly specialized configuration. As part of the 2004 *Defense Authorization Act*, a compromise with critics amended the plan so that the government would instead buy 80 aircraft and lease 20 (Knight, 2008, February, p. 31).

However, in December 2003, the project was put on hold, pending investigations into the conduct of Ms. Druyun, who had left the government for a position at Boeing. In 2004, she admitted wrongdoing that included favoring Boeing over Airbus in the tanker leasing competition²⁰ and began serving a prison term in 2005. Other events associated with the affair included the resignation of Boeing CEO Philip Condit, and the Secretary of the Air Force, James G. Roche, was cited for ethics violations related to the leasing arrangement by the DoD Inspector General (Smith, 2005). In January 2006, the DoD officially terminated its tanker lease agreements with Boeing.

²⁰ Ms. Druyun entered a guilty plea to one criminal count and made further admissions as part of a plea bargain. Her post-plea statement was filed with the US District Court in Eastern Virginia in 2004. See also George Cahlink (2004).



3. Comments on the Result

According to Allison and Zelikow, “Positions define both what players can and *may do*” (Allison & Zelikow, 1999, p. 297, emphasis added) That is, positions come with rules. However, rules can, and occasionally are, broken. In this case, a staffer (Ms. Druyun) and a chief (Secretary Roche) were both found to have broken the rules.²¹ This was a major cause of the leasing initiative coming apart.

Senator McCain was something of an *ad hoc* player (albeit perfectly legitimate). Based on his Keating Five experience, he was very concerned about the possibility of untoward behavior. Because of his position and power, his criticism of the leasing agreements helped bring attention to the entire affair.

G. Second Episode: The KC-45 Competition of 2007-2008

1. Players

The major players included Senator Patty Murray (D-WA, for Boeing), Senator Richard Shelby (R-AL, for NG-EADS), Senator John McCain (AZ), the Boeing Corporation, and the NG-EADS partnership that offered the KC-30 proposal. Although not the only Boeing or NG-EADS advocates in Congress, Senators Murray and Shelby have been among the most prominent and vocal.

Senator Patricia Lynn (“Patty”) Murray (b. 1950) was born and raised in Washington state. Her political career began with her election to a school board in 1984 and progressed rapidly to her election to the Senate in 1992. Her policy positions are strongly liberal. Her criticism of the 2008 KC-30 source selection over the KC-767 (which would be assembled in Washington) is well known. Her Senate assignments include the Committees on Appropriations and the Budget.

²¹ Allison divides players within government into “chiefs” (i.e., high-ranking political appointees), “staffers” (those who work directly for the chiefs), and “Indians” (permanent government employees at lower levels in the bureaucracy) (Allison & Zelikow, 1999, p. 296).



Senator Richard Shelby (b. 1934) was likewise born and raised in the state he represents in the Senate. A lawyer by profession, his political career started in 1963, with service as a city prosecutor. A conservative Democrat, he was first elected to Congress from Alabama's 7th District in 1984, and to the Senate in 1986, switching parties in 1994. His policy positions are strongly conservative, as a rule. He has been a strong advocate for the KC-30, which would be assembled in Alabama. His Senate assignments include the Committee on Appropriations.

The Boeing Company is a major US defense supplier. It is listed in the *SIPRI 2008 Yearbook* as the world's largest defense firm, based on revenues converted to US dollars (SIPRI Top 100). It is also a major player in commercial aerospace markets and a major US exporter. Boeing merged with another major defense firm, McDonnell Douglas, in 1997. About half its revenue comes from defense sales.

Northrop Grumman Corporation (NG) is also a major US defense supplier, listed as the fourth largest (SIPRI Top 100). About three quarters of its revenue comes from defense sales. NG is the result of Northrop's 1994 acquisition of Grumman. NG's major business units are Information and Services; Electronics; Aerospace (but not large airframes); and Shipbuilding.

European Aeronautic Defence and Space Company (EADS) is the result of a merger that culminated in 2000 of a number of European defense industrial firms. EADS included an 80% stake in Airbus when it was formed, with Airbus becoming a wholly owned subsidiary since 2006. EADS is listed as the seventh-largest defense supplier, with about one fifth of its revenues from defense sales (SIPRI Top 100). Given NG's experience in the US defense market, and EADS' (with Airbus) capacity to manufacture large transport aircraft, the NG-EADS team arose as a natural partnership.



2. Game Narrative

The course of this particular affair appears in our 2008 report (Franck, Lewis & Udis, 2008b), and it seems redundant to cover the same ground in much detail here. What follows immediately below is a brief recounting of salient events.²²

The Air Force published a Request for Proposal (RFP) in January 2007. The NG-EADS team (which offered the KC-30 proposal based on the Airbus A330) objected to the terms of the RFP and threatened to not respond, leaving Boeing's KC-767 as the only bidder. With powerful players like Senator McCain insisting on competition, the Air Force had little choice but to back down and revise the RFP along the lines proposed by the NG-EADS partnership.

In February 2008, the NG-EADS KC-30 was announced as the surprise winner of the competition, with Boeing entering a protest in March. In June, the GAO sustained the Boeing protest on a number of grounds and recommended a new competition (GAO, 2008b, p. 2; GAO, 2008a). The DoD accepted the recommendation and announced an abbreviated re-competition (Shalal-Esa, 2008, August 6). However, Boeing objected to the draft of the revised RFP and indicated it might not respond. Facing a situation similar to the NG-EADS objections to the original RFP, the DoD decided to cancel the re-competition, planning on a restart in 2009 (Cole & Lunsford, 2008, September 11).

3. Comments

In our opinion, the most remarkable feature of this competition between the KC-30 and KC-767 proposals was the changed distribution of power among the players (compared to past experience). That is, the industry players have proven to hold surprisingly strong bargaining positions. To mix paradigms somewhat, supplier

²² Also, Gertler (2009, pp. 81-84) has a good summary of this particular source selection and protest.



power increased due in large part to a much-reduced number of competitors for the KC-X contract.²³

The contenders were successful in (a) altering the RFPs to suit their interests, and (b) mobilizing both public and legislative support for their interests. That is, Boeing and the NG-EADS team were both able to effectively object to the terms of the Air Force's RFPs—NG-EADS to the original in 2007 and Boeing to the post-protest revision in 2008. More generally, there may be a shift in the power relations between the DoD and its suppliers in favor of the suppliers. For a number of reasons (some discussed in our earlier reports, Franck, Lewis & Udis, 2008, January; 2008, May), the number of qualified bidders for major systems acquisition awards is frequently two. If sufficiently powerful players insist upon competition (as Senator McCain has), then an RFP with only one serious responder is unacceptable.²⁴ This means the threat of not responding to the DoD's solicitations provides veto power over the terms of the DoD's statements of requirements.

While the Model III literature talks about the possibility of mistakes, miscommunications, and misperceptions complicating governmental politics, there is also the issue of competence. Basically, the GAO found prejudicial errors in the Air Force KC-X (or KC-45) contract award because the Air Force did not follow its own rules and did not follow the criteria stated in the (amended) RFP of 2007. That readily begs the question of whether the Air Force or the GAO got it wrong.²⁵

²³ If the same competition had occurred in, say, 1980, then three US firms (Boeing, Lockheed, and McDonnell-Douglas) would have potentially been serious contenders. At present, there is only one (Boeing, which has absorbed McDonnell-Douglas).

²⁴ However, the DoD may be testing this hypothesis, stating that only minor changes will appear in the final version of the KC-X despite NG-EADS's insistence on significant changes. See, for example, Shalal-Esa (2009, December 17).

²⁵ This is a very interesting question -- first posed to our knowledge (and not for attribution) just after the GAO decision by a very knowledgeable DoD insider. One answer came from a highly qualified and credible source in the summer of 2009 (also anonymous); the Air Force source selection team was not really up to the task -- in our source's opinion.



Finally, it is worth noting that (as was the case at Srebrenica) even if all parties are agreed that action is needed, it is possible to take no action at all—as an outcome of the game of governmental politics. That is what happened in this case, with the attempted rerun of the competition coming apart later in the fall of 2008.

H. Third Episode: The Current Competition

The current competition for the KC-X aerial tanker (and the third attempt in this decade to acquire one) officially began on September 24, 2009, with the release of the new KC-X Draft Request for Proposal.²⁶ However, the game was well afoot prior to that—both in the press and the Congress. Boeing, NG-EADS, and their supporters were heavily engaged in press releases, advertising, and public statements. In addition, there was a congressional impetus (led by Representative John Murtha, as much as anyone) to sanction a dual (or split) buy. The DoD, with Secretary Gates in the forefront, strongly opposed anything other than a winner-takes-all competition. Mr. Gates, with significant help from the White House, seems to have gotten the better result from this particular episode of “pulling and hauling.”²⁷

The cast of players was roughly the same as for the original competition (above), with the significant additions of Secretary of Defense Robert Gates and Representative John Murtha (with his committee position as Chair of the House Defense Appropriations Subcommittee).

Robert Gates (b. 1943) was a CIA officer from 1966 to 1993—a career that included two years of service in the Air Force and assignments to the National Security Council, and that culminated with his appointment as Director of Central Intelligence (1991-1993). Following his service with the CIA, he held a variety of academic posts, published a memoir (1996), and was active as a public intellectual.

²⁶ The Draft RFP is summarized at US Air Force, *Draft Request for Proposal (DRFP) for the KC-X Tanker Modernization Program*, 25 September 2009.

²⁷ The President threatened to veto any legislation that mandates a dual tanker buy. Goldman, 17 August 2009. However, this part of the game is not necessarily over.



From 1996 to 2001, Gates served as interim Dean of the George Bush School of Government and Public Service at Texas A&M University, becoming president of the institution in 2002. He was appointed Secretary of Defense in December 2006. (US DoD, 2010) His tenure in this position has included widely publicized differences with congressional leadership, to include F-22 force size, a second engine (F136) for the F-35, and C-17A force size.

John Murtha (b. 1932) was born in West Virginia and reared in Johnstown, Pennsylvania (within his House district). He was commissioned in the Marine Corps in 1952 and transferred to the Reserves in 1955, entering business in Johnstown. His Reserve service included a combat tour in Vietnam (1966-1967). He has served in the House of Representatives continuously since 1974, with controversies (among other things) over ethics allegations, earmarked appropriations for his home district, and his positions on the war in Iraq.

1. Results (So Far)

This is a story still in progress. In particular, the competitors for the KC-X contract are still (as of December 2009) considering the Draft Request for Proposal, with the final version now expected in January 2010. However, based on the previous two episodes, it's reasonable to surmise that the major characters (with commitments and power) are in the game, the rules are fairly well known, and sudden entry of new, *ad hoc* participants is unlikely.²⁸

Interestingly enough, the draft RFP has appeared to be something short of “bulletproof.” Press reports indicate that fuel offload rates and toilet water flow rates are of equal importance in the selection criteria (Air Force Magazine, 2009, October 29; Drew, 2009, October 27). This seems unlikely, but it indicates, at minimum, a lack of clarity in the RFP itself (which has been publicly released)—or a failure to

²⁸ In a very real sense, repetition of the game has caused a certain degree of “regularization” of the action channels—a term from Allison and Zelikow (1999, pp. 294-295).



embody the Air Force priorities in the RFP. Also, according to press reports, Boeing and the NG-EADS team had posed 50 questions to the Air Force by October 19, with, for example, only 9 of those answered, even though half of the RFP review period had already passed. This casts some doubt on conduct of the competition ahead being “perfecto”—to use Chief of Staff of the Air Force General Norton Schwartz’s term (Gnau, 2009).

The NG-EADS team stated that it would not respond to the KC-X RFP without substantial changes (Wolf, 2009; Shalal-Esa, 2009, December 1; Tiron, 2009, December 1). The Air Force and the DoD have indicated a willingness to consider changes, but no inclination to make the sort of changes the KC-30 team apparently demands (Shalal-Esa, 2009, December 14). It’s possible the non-response threat (invoked for the third time) has been used too often.

It’s also possible the NG-EADS team lacks sufficient political leverage at present to make non-response sufficiently threatening to the DoD. Furthermore, it’s not clear that NG-EADS will respond to the RFP, even if their latest threat was based on a miscalculation.

However, if there is a KC-30 entrant to this competition, both sides have clearly armed themselves for a protest following any adverse contract award decision—even if there is a competition. For the Boeing advocates, there’s the “Buy America” claim.²⁹ However, the EU and some of its members have taken steps to bolster those Boeing supporters’ case for continuing the fight, both to the GAO and to Congress (should they lose the initial contract award). Some specifics follow:

- The WTO has ruled against EU practices (at least tentatively) in providing development (“launch”) assistance to Airbus (Clark & Drew,

²⁹ A dubious claim at best, that’s gotten weaker over time—a point discussed by many sources including our 2008b report. Even though it will have no weight in deliberations of the GAO or federal courts, there are a number of vocal Boeing supporters in Congress (e.g., Senator Murray) who have strongly taken this position. Gertler (2009, p. 8) discusses the current state of the competing job impact claims.



2009). The A330 (the basic airframe for the NG-EADS KC-30 proposal) can, therefore, be argued as a clear violation of the rules of international trade and an unfair advantage for the KC-30.³⁰

- The EU has indicated that the WTO ruling, regardless of final outcome, will not affect current subsidies for the A350 and other Airbus developments in the future (Rothman & Stearns, 2009, August 28). To Boeing supporters, this means that not only has Airbus received unfair advantages, but also Airbus' benefactors are unrepentant.
- Despite an announcement that the replacement aircraft for its KC-135s would be competed openly (Morgan, 2009, April 29), France has taken strong steps toward a sole-source procurement of a tanker derived from an Embraer aircraft (KC-390), as an offset for Brazil's purchase of Rafale fighters (Wall, 2009).³¹

On the other side of the competition, EADS and NG have argued that revelations of the KC-30s pricing strategy to Boeing (following the original contract award in 2008) constitute an unfair advantage for Boeing. KC-30 supporters, such as Senator Shelby, have strongly concurred with that position (Reed, 2009).

2. Looking ahead

The most likely outcome to the ongoing chapter of the KC-X saga is described below. However, it's useful to insert a methodological disclaimer before doing that. Model III requires a high degree of information (on the order of a continuously videotaped reality TV series like *Big Brother* or *Survivor*) to do a really high-confidence Model III analysis. For example, the paradigm is designed to analyze players from various agencies involved in governmental decision-making.

³⁰ Some of Boeing's congressional supporters have indeed made that case (Borak, 2009).

³¹The implications of the KC-390 handshake are not completely clear. The KC-390 is clearly intended to be a multi-role tanker-transport, but it is also sized very close to a C-130—albeit with swept wings and turbofan engines. Background information on the KC-390 is available at *Defense Industry Daily* (2009, September 8) and in a Wikipedia article titled "Embraer KC-390." Whether the French Government sees KC-390s as replacements (even partial) for its KC-135s has (to our knowledge) not yet been revealed. An interesting claim that could be made by Boeing supporters is that France has put other interests ahead of open competition for new aircraft—an interesting twist on the old two-way-street discussion of transatlantic arms trade.



Thus, for example, any national security issue is highly likely to have both the Departments of State and Defense as interested players—who will likely engage in “pulling and hauling” in favor of their preferred policies. A thorny question for Model III analysis of such a situation is how to treat the major players. Should the State Department’s behavior be understood as the result of pursuing Department interests (i.e., as a Model I actor)? The result of bureaucratic processes within State (Model II)? Or the “resultant” of a bargaining game conducted among the agencies within State (Model III)?

Basically, Model III analysis demands a very large amount of data, if taken literally. There are also rather thorny level-of-analysis questions facing any Model III analyst. In short, we see Model III as being of more use for case-study writers than for those who wish to make predictions about government policies.

Nonetheless, we’re in a reasonably good position to make a prediction here—or, at least, to suggest most likely paths ahead. The players and their preferences are fairly well known, and a well-defined infrastructure of the game appears to have taken shape:

- After considerable discussion (perhaps non-public) between the NG-EADS team and the DoD, there will be a KC-30 entrant into the new KC-X competition—with DoD/Air Force changes to the RFP that are accepted as “sufficient.”³²
- Following Administration guidance, the Air Force will award the KC-X contract this time to either Boeing (KC-767 or KC-777)³³ or NG-EADS

³² We’re not at all sure about this statement, but we would place a modest even-money bet on its being true. Our limited degree of confidence is built in part on the supposition that EADS-NG would compete (even if they thought the final RFP was rigged to favor Boeing) in order to continue the competition (in a larger sense) later on at GAO, federal courts, and Congress. Thinking along these lines, one possible basis for a protest of an award to Boeing would be the emphasis on cost in the current draft RFP. While Boeing was debriefed in 2008 on the KC-30 pricing strategy, EADS-NG has no comparable information for Boeing. Moreover, requests for such information have been denied (Gnau, 2009).

³³ Boeing (2009) has publicly stated that it is considering offering a K7A7 (767 or 777) as its entry (entries perhaps) to the next KC-X competition.



(KC-30). The losing firm will protest to the GAO after a minimum decent interval.

- Given the strongly political nature of the KC-X controversy, the GAO will face a tough task, and it's difficult to predict what will happen to the protest itself in GAO deliberations. Regardless of who wins (and who protests), we think it more likely that the protest will be sustained than rejected. Both proposals will be good, with the winner likely chosen by a relatively narrow margin. As noted above, the RFP seems much short of impregnable, and (based on past experience) it's unlikely the Air Force will conduct the competition sufficiently close enough to "perfecto" to avoid errors that could have made a difference in the final award.³⁴ That is, we think it conceivable (perhaps likely) that either party could build a strong case for its protest. Finally, given the considerations above, sustaining a protest seems the safer course for the GAO as an agency.
- However, even if the protest is not successful with the GAO, there is some possibility of the matter going into the federal courts. The controversy will certainly affect what occurs in the Congress and the legislation that funds KC-X acquisition.

Hence, we believe the likely results from this chapter will come from the following list (most likely first):

- (a) Nothing. The competition starts again, pretty much from scratch.
- (b) Congressional initiatives for dual sourcing the KC-X. Both sides already have grievances to press and members of Congress who are willing to strongly state them (both sides).³⁵

³⁴ A sports analogy seems useful. Suppose two competent, closely matched teams play against each other and one wins the contest by a close score. Now suppose the losing team protests the outcome, citing officiating errors that could have indeed made a difference and supplying game film to reviewers who critique, at leisure, decisions made by the field officials during the game. It seems likely that most sporting events fitting this description would not stand up to the criteria that the GAO is likely to apply (and perhaps did apply in its decision in 2008).

³⁵ Even if Boeing is the only respondent to the current RFP, it seems pretty well established that the "competition" includes more than the standard DoD understanding of it. It's entirely possible that dual-source initiatives would still appear in Congress. It's possible to infer from recent statements from Representative Murtha (D-PA) and others that the issue is certainly not dead (Tiron, 2009, December 2).



- (1) The end result of congressional initiatives, which would encounter opposition from the Administration, is something of a stalemate. While the contract is awarded, its execution is not adequately funded (or authorized) by Congress. The veto power of the president, in this case, is at odds with previous decisions to restrict imports based on deviations from international trading norms;³⁶
- (2) The end result is a dual-sourcing arrangement, with the second party trailing the first. Those defending this result will make reference to the Great Engine Wars of the 1980s (featuring Pratt & Whitney and General Electric engines for tactical fighters).

In short, there are many ways this particular attempt to acquire a KC-X could end badly. The only way we see it ending well is through some form of dual sourcing.

I. Closing Observations on the KC-X Affair and Quarrelsome Committees

We think it readily apparent that Model III (governmental politics) is a better explanatory paradigm than the sovereign monopsonist. What has happened (and is happening) in the KC-X competitions has a much better likeness compared to Allison and Zelikow's "pulling and hauling" than the unified, rational calculations posited in standard microeconomics.

Also, Model III offers useful insights into the KC-X Affair. First is the role of power in determining outcomes. There are more players with real clout than the Administration apparently realizes. The prospective bidders (Boeing and NG-EADS) have considerable power in shaping the competition since both are absolutely essential to there being a competition.

³⁶ There are a number of indicators that show Congress' willingness to exercise a high degree of oversight over the KC-X source selection. Among them is the apparent charter for a recent CRS study, which has a very broad definition of issues for congressional concern (Gertler, 2009, pp. 1-2).



Second is the uncertainty, noise, and entry of unexpected players. Thus, for example, Senator McCain's entry into the leasing chapter of the KC-X saga was (likely) something of a surprise to the DoD players.

Finally, collective outcomes do not have to be "rational"—in a superficial and naïve sense. The interaction of quarrelsome players with poorly designed decision processes (action channels) can lead to outcomes in which nothing constructive gets done. It happened that way in Srebrenica in 1995; it may happen that way in 2010.

1. **Our Bottom Lines for Understanding the KC-X Saga**

- The classical sovereign monopsonist model of defense markets has only limited applicability to explaining the current KC-X competition.
- We can tentatively conclude that other paradigms—such as Allison's Model III—offer a more useful lens from which to view the ongoing KC-X Affair.
- Finally, and from a Model III perspective, we can say that the behavior of the federal government more closely resembles the disorderly, veto-ridden processes observed in the Srebrenica Affair of 1995 than the behavior of the government in the Cuban Missile Crisis of 1962 (in which the "pulling and hauling" led to a sensible decision with reasonably favorable outcomes).



THIS PAGE INTENTIONALLY LEFT BLANK



III. Airbus and Development of the A400M

A. Introduction

Airbus is a fully owned subsidiary of the European Aeronautic Defence and Space Company (EADS), which is controlled by three firms: Daimler Aerospace, or DASA, (Germany); Aérospatiale Matra (France); and Construcciones Aeronáuticas SA, or CASA, (Spain) (Lambert, 2009). Airbus' first aircraft designed for exclusively military use was the A400M, a strategic and tactical transport whose development, manufacturing, and entry into service served two purposes. First, the European nations participating in the project wished to reduce their dependence on Boeing, the only other manufacturer of large transports and, by extension, on US military aircraft. Second, a perceived need existed for an aircraft that combined the tactical airlift capability of the Lockheed Martin C-130 Hercules³⁷ and the strategic range, outsize payload capability, and ability to carry heavy vehicles (such as tanks) of the Boeing C-17A Globemaster III.

The A400M's origins lie in a 1991 *Outline European Staff Target* document for what was originally termed the Future Large Aircraft (FLA). The FLA was intended to replace the C-130s operated by Belgium, France, Germany, Italy, Portugal, Spain, Turkey, and the United Kingdom (UK), as well as the C160 Transall operated by France and Germany. The high-winged aircraft was originally designed with four turbofan engines, but when it was determined that this type of propulsion did not meet requirements, four turboprops were substituted (Jane's, 2008, December 23).

Perhaps unique for a new military aircraft and for one of a size and type that did not yet exist, the contract signed with Airbus in 2003 specified a fixed cost of €20 billion for 180 aircraft, with design, development, and production integrated into a single phase and with the first item delivered in 2009, a breathtakingly fast schedule

³⁷ The model currently in production is the C-130J Super Hercules.



for an aircraft that had never been built. The six participating nations³⁸ were represented by the Bonn-based Organisation conjointe de coopération en matière d'armement (OCCAR), a multinational weapon-system purchasing consortium with no lead nation and created through a series of treaties signed by Belgium, France, Germany, Italy, Portugal, Spain, and the United Kingdom (UK) (Masseret & Gautier, 2009, pp. 15-16).

The prototype aircraft finally flew December 11, 2009, with delays reportedly due in significant part to difficulties encountered in commercial certification of the Full Authority Digital Engine Control (FADEC) software by the European Aviation Safety Agency (EASA) (Chuter, 2009, May 7; Gribben, 2009; Pearson, 2009).³⁹ The first six aircraft built were, depending on whose estimate one accepts, between 7 and 12 tons overweight, creating concerns about what the actual payload/range capability of the A400M would be. The German government had expressed the view that the aircraft, as finally produced, would not meet its requirements, such as the ability to transport armored vehicles as far as Central Asia (Chuter, 2009, May 11; Flottau, 2009). Because of the delays, Airbus unsuccessfully proposed to its customers use of A330-200F wide-body airliners as an interim solution. This proposal angered some German officials, who needed the A400M to replace, in a tactical role, the C160 Transalls. An airliner such as the A330 could never land on short or unimproved airfields (Flottau, 2009). Even France considered reducing its

³⁸ With respect to the initial seven participants above, Portugal has withdrawn. Luxembourg has committed to one aircraft, and Turkey ten, although neither nation is a member of OCCAR. Additionally, twelve aircraft have been ordered by Malaysia and South Africa, bringing the total planned to 192, although South Africa has since cancelled its order (Chuter, 2009, 7 May).

³⁹ That said, however, it's entirely possible that the first flight was schedule-driven rather than the result of software maturity. Press reports indicate that data transmission (or computer or software) problems with the Avionics Full-Duplex Switched Ethernet (AFDX) system caused a delayed takeoff and prolonged the flight – due to need to reset the aircraft computers (Hoyle, 2009; Wall & Barrie, 2009). Information on AFDX is available at Adams (2003) and from the manufacturer (AIM GmbH, 2010). However, the second test flight has been reported not to have had any such problems (Wall, 2010).



A400M purchase from its original request of 50 units to purchasing or leasing C-17As or C-130s instead (Taverna & Barrie, 2009).

Airbus CEO Thomas Enders characterized the A400M program as a “mission impossible” (Flottau, 2009). EADS is liable for €5.7 billion in penalties because it missed several contracted milestones, including first flight, and is trying to renegotiate the entire A400M contract with OCCAR (Brothers, 2009).

B. A Unique Acquisition Process

Some common-sense principles make their way even into the often perplexing world of defense acquisition. For example, if a customer wishes to purchase a well-established, well-defined product (i.e., manufactured, maintained, and operated for a significant period of time with what previous customers consider an acceptable “track record”), then the customer should expect the manufacturer to quote a fixed price for each unit. In turn, the manufacturer, having produced many of the same items and assumedly continuing to do so, should be able to quote a fixed price per unit. The manufacturer can do so because the production cost should be known, as well as the expected profit.

A relevant example is the C-17A Globemaster III, a jet airlifter of which over 200 are being produced by Boeing for the United States Air Force (USAF). Other nations purchasing this aircraft were able to evaluate about ten years of production by Boeing, maintenance experience (a responsibility shared by Boeing, Pratt & Whitney and the USAF), and the USAF operating record since the first unit was delivered in 1993.

Accordingly, during the period from 2001 through 2007, Australia and Canada took delivery of four C-17As each, and the UK received four leased aircraft, eventually purchasing them along with two additional aircraft. The three nations knew exactly what they were purchasing, and Boeing knew what it was selling. The USAF and Boeing had shouldered the development costs of the C-17A long ago, and production costs had not only been determined but also reduced with learning



and economies of scale. The three export customers simply negotiated a price with Boeing for a known product. Since 2008, an additional two aircraft have been ordered by both Qatar and the United Arab Emirates, and two for a NATO airlift pool (Jane's, 2009, May 13).

The C-17A story may seem pedestrian, but two facts should be emphasized. For the USAF, the aircraft program included competitive prototyping, selection of a winner, development, test and evaluation, engineering and manufacturing development, and the transition toward a regular production rate. The USAF's C-17A then demonstrated its reliability, maintainability, and operating costs over an extended period. Neither the USAF nor Boeing could be expected to sign a contract with a fixed cost for a fixed amount of aircraft when the program was initiated during the 1980s. However, the other (downstream) customers were able to negotiate a firm price, and acquire an aircraft with known operational and support costs and characteristics.

If the above makes sense to the reader, then it should have made sense to the European nations who first defined the requirement for the Future Large Airlifter in 1991, as described in the introduction. The aircraft had not been designed, built, or flown. Furthermore, no turboprop airlifter capable of carrying an outsize payload of 66,139 pounds over 2,400 nautical miles, as well as being capable of modification to an air-to-air refueling (AAR) role, had ever existed.

C. The Engine: Unsurprising Results of Curious Behavior

A further challenge arose when the sponsoring nations rejected the Pratt & Whitney Canada (PWC) turboprop that Airbus had selected for the A400M. Instead, Europrop International, a consortium of four European firms,⁴⁰ was subcontracted by Airbus to design and build the world's largest turboprop engine, now known as the

⁴⁰ Europrop International, with headquarters in Munich, is owned by the following firms: ITP (Spain) 16% of shares, MTU (Germany) 28%, Snecma (France) 28%, and Rolls-Royce (UK) 28% (Jane's, 2008, July 16).



TP400-D6 for reasons of European “operational sovereignty” and under pressure from some of the European states purchasing the A400M. The reversal of the manufacturer’s decision to select the PWC engine was direct political interference in what had been repeatedly proclaimed to be a “commercial” acquisition process (Jane’s, 2008, December 23; Masseret & Gautier, 2009).

Within the sphere of military transport aircraft, engines are rarely a major challenge. Often, the engines are variants of those used on airliners or of those used on other military transports. For example, the two-engine C-27J Spartan produced by Italy’s Alenia uses the Rolls-Royce AE2100-D2 turboprop, which is essentially the same as the Allison AE 2100D3 used on the four-engine C-130J operated by Australia, Canada, Denmark, India, Iraq, Italy, Norway, Qatar, the UK, and the US⁴¹ (Alenia Aeronautica, 2009; UK Royal Air Force, 2009; Rolls-Royce, 2010). The venerable USAF C-5 Galaxy, currently the largest military transport in regular service, is being updated to the C-5M version with new avionics and a new engine derived from the General Electric (GE) CF6, which is also used on the C-17A. The CF6 powers more wide-body Airbus and Boeing airliners than any other engine and has been in continuous production since 1968 (Jane’s, 2008, February 6).

Acting in a similar manner, Airbus had selected what the firm felt was the best engine to power the A400M: a new PWC model based on the core of the successful PW180 turboprop (Jane’s, 2009, January 27). Once the PWC choice was overturned, Airbus asked OCCAR to remove the engine from the A400M contract requirements. This would have had the effect of requiring OCCAR to purchase the never-built and unproven TPD400-D6 separately and to provide it to Airbus as a finished product for installation in the A400M as what is commonly referred to as “government furnished equipment” (GFE). The Airbus request for a GFE engine was refused because the partner governments maintained their position that Airbus

⁴¹ Rolls-Royce acquired Allison Engine Company, based in Indianapolis, in 1995 (Rolls-Royce, 2010).



should remain the only prime contractor (Masseret & Gautier, 2009). In order to keep the €20 billion contract, Airbus was forced to considerably increase its risk by buying an engine that had never been built and that was produced by a consortium of four engine manufacturers. This represented a major contrast with Airbus' selection of PWC as a single subcontractor for its proven engine design.

D. The FADEC Saga

The political decision to buy a “European” engine led to the development of an unproven FADEC, which added significantly to development costs for the A400M. Given that the A400M is considered a commercial aircraft, it is somewhat surprising that the FADEC was developed without reference to EASA standards.⁴² Both the engine and FADEC have proven themselves in static trials and in a flight test with one TPD400-D6 engine mounted on a C-130, owned by Marshall Aerospace (Chuter, 2009, May 7). The core difficulty was that the FADEC software was apparently written without EASA certification in mind. This is understandable, as the software was written by Europrop International, member firm MTU, without reference to EASA requirements. The software deficiency delayed the first flight beyond the date of March 31, 2009, set out in the A400M contract; the partner nations and OCCAR are currently attempting to renegotiate the contract. Referring to the first-flight milestone as the “event,” an industry observer noted:

However, the achievement controlling the timing of that event, EASA's engine certification, is planned for the end of the year, says Nick Durham, president of the Europrop International (EPI) consortium developing the TP400. Durham says a version of the MTU-developed Fadc software to allow first flight was nearly ready last year, when developers realized it failed to meet EASA development standards and couldn't be certificated. Developers then went back to recode the software, adhering to EASA standards, Durham says. EPI members had to triple their workforce to do the recoding.

⁴² Military aircraft are usually first ordered by a flying service within the country where the aircraft is developed and assembled. However, in the case of the A400M, there was no lead nation or flying service. Accordingly, the A400M by default requires commercial certification.



Developers decided not to seek a waiver from EASA to commence flight trials with a noncompliant Fadec while they rewrote the software in parallel. Jacques Desclaux, EPI's executive vice president, says there were indications the waiver would not have been granted. Other program officials say some on the A400M development team were also concerned that flight-testing done with a noncompliant Fadec would have to be redone, too. (Wall, 2009, May 11)

Just as the aerostructures of contemporary aircraft as a whole are now considered inseparable from their on-board systems, the same could be said about propulsion systems and the avionics that control them. The highly successful CF6 engine described above, for example, has benefited from years of incremental development as a commercial turbofan for wide-bodied aircraft, with the reliability and efficiency of the software that controls the engine being as integral to the engine's safety and performance as the turbine blades. So what was said previously about the preference for adapting well-established commercial engine designs to military transport aircraft applies as well to the software that controls propulsion.

The MTU-managed FADEC development for the TPD400-D6 engine therefore raises some concerns. First, while MTU developed the software, Snecma designed and built the computer for the Engine Control Unit. Second, the size of the software as initially developed was disproportionately complex: 275,000 program instructions, as opposed to about 90,000 in the Dassault Rafale fighter or the superjumbo Airbus A380. Third, the principle of "commercial" contracting prohibited OCCAR or its member governments from exercising any oversight over Airbus or its subcontractors. The effect of the commercial approach on Snecma was clear: during the calendar year 2008, the firm wrote off €160 million in losses because of the A400M. Snecma's longstanding joint venture with GE (CFM International) and revenue from services kept Snecma's parent company, Safran, profitable during the year (Wall & Taverna, 2009).

Finally, and most disquietingly, the MTU staff that developed the FADEC software did so apparently without regard to the requirement for EASA certification; what certification the software's developers had in mind has never been disclosed.



The rework of the software to EASA standards, as well as the need for effective coordination between MTU, Snecma, Airbus, and its other subcontractors on system integration, led to a new coding effort that required three times the effort of the initial software—whatever the quality or purpose of that software was. One is left to wonder about the implementation of decades of lessons learned and progress in software quality assurance during MTU's development process, which may also have suffered from the highly accelerated nature of the six-year A400M design, development, and production contract between OCCAR and Airbus, referred to previously (Masseret & Gautier, 2009; Chuter, 2009, May 7; Wall, 2009, April 16).

E. The United Kingdom: Pulled in Too Many Directions

While the UK's participation in what became the A400M dates from 1993, that nation's involvement was originally limited to British Aerospace (now part of BAE Systems) and Shorts (now part of Bombardier). In May 2000, the UK Ministry of Defence announced its intention to purchase 25 aircraft. Rolls-Royce, BAE Systems, and Marshall Aerospace are among the British firms that are subcontractors to Airbus (Jane's, 2008, December 23). Rolls-Royce is a member of the Europrop consortium building the TP400-D6 power plant, but responsibility for the troubled FADEC rests with the German firm MTU (Masseret & Gautier, 2009; Jane's, 2009, January 27).

The UK's *Defence Industrial Strategy* has excluded transports such as the A400M from the technologies in which that nation needs to maintain a domestic industrial base, explained as follows:

The world market for the large and training aircraft is not presently a concern, and there is no sovereign requirement to maintain an indigenous capability in these areas. We will continue to need, however, the systems engineering and design skills and access to Intellectual Property Rights for the integration of new mission systems, avionics, and defensive aids into these platforms. (United Kingdom Ministry of Defence, 2005, p. 86, paragraph B4.20)

As would be expected from a close US ally, the Royal Air Force (RAF) currently has an inventory of five C-17As and fifty C-130s. The aging C-130K model



is gradually being replaced by the C-130J. The only other large RAF transports are the Vickers VC10 and Lockheed Tristar, both obsolescent 1960s airliners of which the VC10 also has an AAR role. Future UK AAR and troop transport requirements will be met through a “power by the hour” lease arrangement, using modified Airbus A330-200s (UK Royal Air Force, 2009).

The US-oriented composition of the RAF transport fleet, combined with the desire to maximize commonality of spares, training, maintenance, and other support factors that characterizes any military service, had led to some questioning as to the necessity of adding the A400M to the UK inventory. Given that the A400M was designed to fill the middle ground between the C-130 and C-17A, there is no clear operational need for the A400M. With the UK government weathering the defense procurement challenges and poor economic outlook of most developed nations, the UK commitment to purchase 25 aircraft is coming under increasing scrutiny by the Ministry of Defence and Parliament. As explained by the National Audit Office, the UK’s legislative auditor:

A total of 180 aircraft are planned to be procured through a contract with Airbus Military,⁴³ and the United Kingdom’s planned share is 25 aircraft. The project has been delayed subsequently by a variety of contractual and budgetary difficulties affecting all partner nations. The project has slipped by a further nine months in 2007-08, as the contractor is unable to deliver the aircraft when originally planned, and the Department [i.e., Ministry of Defence] now expects to achieve the In-Service Date (delivery of the seventh aircraft) in December 2011, with the final aircraft delivered four years later. The Department plans that the A400M fleet will deliver the full range of operational benefits by 2018.

The additional delays to A400M have led to an increase in forecast costs of £13 million because of an increased cost of capital charge. An additional £61 million of cost growth is due to higher estimates for training and other facilities

⁴³ The former subsidiary Airbus Military Sociedad Limitada (AMSL) has since been eliminated and folded into the parent firm (Lambert, 2009). Because AMSL was headquartered in Spain, there has been significant discontent raised by the Spanish government because of this decision to better integrate Airbus’ design and integration efforts at its French and German facilities (Wall, 2009, April 16).



that the Department is responsible for providing. These cost increases are offset by a number of savings, which means that the net in-year cost growth is only £3 million. Examples of savings are £26 million by deleting the requirement for one of two training simulators, and another £16 million through favourable exchange rates. (UK National Audit Office, 2008)

The aircraft is still several years behind the original schedule, with Airbus' initial delivery now estimated at late 2012 (Wall, 2010, p. 33). The A400M has perhaps become an anachronism, given the current state of UK foreign relations towards the US and Europe and the nation's ability to sustain major defense programs.

The delays and cost overruns of the Eurofighter Typhoon program and the collapse of the Horizon cooperative European frigate project did little to endear the British public to the A400M (Martí Sempere, 2008; Masseret & Gautier, 2009). Members of the UK House of Commons have already proposed canceling the RAF order and walking away from the A400M adventure, paying the necessary contractual penalties to OCCAR and completing the RAF fleet with C-130s and C-17As (Evans-Pritchard, 2009; Gribben 2009). The House of Commons' Defence Committee has summarized the current situation effectively:

The A400M aircraft programme—to provide new tactical and strategic airlift—is running some two years late. Once the extent of the delay to the A400M programme is confirmed, the MoD [Ministry of Defence] needs to decide whether it considers the programme to be so delayed that abandonment would be preferable, and to take timely decisions either to procure or lease other airlift assets so that a capability gap in air transport does not develop. (UK House of Commons Defence Committee, 2009)

One further dimension of the UK's involvement in the A400M saga should be discussed, which goes beyond the RAF's operational requirements but does affect the UK economy and industrial base. UK firms have a significant role as subcontractors to Airbus, particularly with respect to the fabrication of the A400M wing. Given that subcontracts were awarded on a "commercial" basis to those British firms, the withdrawal of the MoD and its 25 aircraft from the program should



not, at least in theory, affect UK subcontractors more than through the reduction in order size.

However, a cutback in the UK industrial contribution, on its own or under pressure from what would be the six remaining partner governments, cannot be ruled out. Of course, changing the supplier of the wing and other critical components at this late stage in the development of an already-troubled program would certainly increase costs and introduce additional delays, as well as subject Airbus to legitimate criticism as a policy instrument of one or more continental European states. There is also long-term speculation about how the MoD's withdrawal from the A400M program would affect British industrial participation in the presumed (but not announced) follow-on series to the A320 family of Airbus narrow-body aircraft. What weight the speculation or fear of some future "revenge" against UK industries, versus the more certain prospect of savings from withdrawal (taking into account contract termination costs) by an already severely stressed UK defense budget, remains to be seen (Barrie, 2009).

F. Conclusion

In early 2009, the French and German governments announced plans for a future heavy-lift transport helicopter, to be developed by 2020. While the initiative will clearly involve other EU member states, a subsequent statement at an event hosted by the EU's European Defence Agency (EDA) was telling:

France and Germany envision buying about 100 helicopters "but the development costs are so high that a European development program alone doesn't make sense," [EDA Chief Executive Officer Alexander] Weis said. EU decision-makers are eyeing potential U.S. cooperation. The project "offers potential for trans-Atlantic cooperation" because "the market for such an expensive heavy transport helicopter is simply too small alone," Javier Solana, the EU foreign policy chief, said March 10 at the EDA's "Helicopters: Key to Mobility" conference. (Hale, 2009)

At about the same time, officials of the French aerospace firm Dassault and the French government were trying to re-insert the Rafale land- and carrier-based



fighter into India's \$10 billion competition for new aircraft. The Rafale had been rejected in the first stage of the selection process by India's Ministry of Defence, and a concerted effort was being made to get the aircraft back into the selection process. India's program was particularly attractive to Dassault because it included a now-infrequent requirement for the purchase of carrier-based aircraft. Additionally, the Rafale has yet to garner a single export order (Felstead, 2009; Raghuvanshi, 2009), although Brazil has recently expressed strong interest (Defense Industry Daily, 2009, September 8).

The A400M experience has not been particularly successful by any standard and, despite its "commercial" label, has ended up with many of the dysfunctional characteristics that are traditionally associated with multinational European-defense projects. The lack of a lead nation and the use of the weak procurement agency OCCAR as the contracting authority discouraged dialogue between the customer governments, Airbus, and Airbus subcontractors. Airbus also showed itself to be subject to political pressure as to the allocation of work share, which led to the creation of the loose Europrop International consortium building the largest turboprop ever conceived, using four independent firms. Finally, it would be reasonable to state that the preoccupation with the engine, as well as with the design and construction by Airbus during the same period of the A380, the largest airliner ever built, distracted the firm's managers, engineers, and designers from other A400M problems such as excessive weight. One observer has effectively captured the challenges of these European defense projects:

European defence firms have been much slower in adapting to the post Cold War changes compared to the US. Much has to do with the fact that national thinking and the desire to remain autarkic in matters of defence are still dominating the European defence industry. Due to the power of national political and industrial elites, the European defence industry evolved into a set of national establishments, predominantly state-owned, and oriented to domestic armed service requirements. Despite massive integration trends in the economic and political sphere in Europe, the emergent arms industry did not follow suite and did not take a truly European form aiming at a rational



division of labour among the different countries. The ability to influence armaments production is at the heart of a country's sovereignty. (Frey, 2009)

Instead of distributing work shares on the basis of comparative advantages, collaborative projects have applied the principle of “juste retour” (work is distributed according to orders). Most work-share arrangements are driven by national aspirations to develop technological expertise. Other challenges result from overlapping capabilities or distorted views of the capabilities of various contractors within a partner nation. Moreover, juste retour, when pushed beyond technical sense, will lead to increased costs and excessive technical risks, which, in turn, leads to delays and technical failures. Lastly, in a collaborative project, different languages, country-specific regulations, and costs incurred from transporting people and goods over great distances cause additional problems—all of which means that collaborative projects often do not yield the cost benefits hitherto anticipated. Despite the many challenges of such projects, international cooperation becomes more attractive as the development cost and the ratio of development-to-production cost increases. This is what defence industries are facing in the 21st century (Frey, 2009).

As well, the planned helicopter acquisition mentioned above perhaps represents an indication that the Europe versus US mindset is beginning to be questioned on both sides of the pond. In the US, the equivalent trend can be seen through US acquisition of European airframes such as the USAF's C-27J Spartan (based on a small, Alenia tactical airlifter) and the US Coast Guard's HC-144A Ocean Sentry medium-range surveillance aircraft, derived from the EADS-CASA CN-235 turboprop (Alenia Aeronautica, 2009; US Coast Guard, 2009). Hopefully, a more systematically cooperative, transatlantic approach to aircraft acquisition will emerge, which benefit Europe's current circumstances.

Faced with shrinking defense budgets, downsized militaries, and declining demand, the long-term viability of many national defense industries is now in doubt. The technological and resource demands of new, sophisticated weapon systems



have escalated beyond the production capabilities of most countries, and most have grown increasingly dependent upon defense exports and imports for their survival, regardless of their earlier position in the international production hierarchy. As Richard Bitzinger (2000) observes, “As the economic and technological barriers to domestic arms production rise, the second-tier producers find themselves increasingly at a crossroads when it comes to the future of their indigenous defense industries.” The same is true for other arms producers at lesser stages of capability.

None of the arms-producing nations—including France, Germany, Italy, and the United Kingdom—have been able to reduce their reliance on foreign imports, especially in the areas of “weapons design, engineering and development assistance, critical components and subsystems, machine tools and production know-how” (Bitzinger, 2000). Even these more advanced industrial economies suffer from insufficient defense R&D and an inadequate scientific and technical infrastructure “to pursue breakthroughs and applied research in many critical technologies” (Bitzinger, 2000, cited in Neuman, 2006).

G. Postscript

At this writing, there have been reports of cancellation of the entire A400M project. Airbus CEO Thomas Enders has announced a loss of confidence in the A400M development effort and has announced plans to cancel the A400M, particularly if Airbus and the participating nations cannot reach agreement over sharing the cost overruns (AFP, 2010; Burger, 2010; Hollinger, Clark & Lerner 2010). Whether this constitutes a sincere revelation of EADS intentions or simply a bargaining position remains to be seen.



IV. The Nordic Nations: An Emerging Defense Bloc?

This section is devoted to an examination of the likelihood of a Nordic defense bloc emerging in the next few years. Thus, the use of the question mark in the title is intentional. It may be useful, also, to define the words “Nordic” and “bloc” as they will be used here. For our purposes, “Nordic” will refer to the countries of Denmark, Finland, Norway, and Sweden. Traditionally, Iceland is also considered to be a Nordic state, but, despite its status as a member of NATO, it does not maintain military forces as they are usually defined. Thus, any review of its defense role in this report will only be incidental to the broader picture.

The word “bloc” will be used, largely, as synonymous with the term “alliance.” We have chosen the definition and description of the concept presented some years ago by Stephen M. Walt (1997): .”An alliance is a formal or informal commitment for security cooperation between two or more states. Although the precise arrangements embodied in different alliances vary enormously, the defining feature of any alliance is a commitment for mutual military support against some external actor(s) in some specified set of circumstances. This concept includes both formal alliances—in which the commitment is enshrined in a written treaty—and informal, *ad hoc* agreements based either on tacit understandings of some tangible form of commitment, such as verbal assurances, or joint military exercises. The inclusion by states of both formal and informal alliances...makes sense because states may provide considerable support to one another even without a formal treaty, and because the presence of a formal agreement often says relatively little about the actual degree of commitment.”

This definition, however, is not without ambiguity. It includes *ad hoc* or informal agreements, including joint military exercises. As will be noted below in the interview material, joint military exercises are being held in Sweden where NATO forces are training together with those of the host country, despite Sweden’s neutral



status and insistence by government officials that these activities do not violate that neutrality.⁴⁴ If joint military exercises fit the definition of “alliance,” one wonders if joint production of defense equipment similarly qualifies for inclusion in the definition. For our purposes, it will be so treated. It is a topic much closer to the concerns and attention we encountered in our meetings than joint exercises.

To examine the term “Nordic” is much more complicated than simply listing the states that are so identified. The German commentator and co-editor of *Die Zeit*, Josef Joffe (1997), once described Scandinavia as “the half-forgotten subcontinent of Europe.”⁴⁵ To correct this condition requires, at least, a brief review of the history and culture of the region.⁴⁶ To better understand where this region and its component countries are today, it helps to know how they got here.

A. Historical Background

Historically, the Nordic countries have been identified as “The North,” conjuring images of a specific culture, geography, and politics and descriptive of a region rather than specific countries. Klinge (1984) notes that in the national anthems of Norway, Finland, and Sweden, “it is not the individual country that is proclaimed to be the true object of Northern man’s love, attachment, and identification, but the North itself” (p. 257).⁴⁷ In the 17th century, especially during the period when

⁴⁴ For related current developments, see Gerard O’Dwyer (2009, September 7).

⁴⁵ Josef Joffe’s endorsement on the cover of Ingemar Dorfer’s (1997) *The Nordic Nations in the New Western Security Regime* (Washington, DC: Woodrow Wilson Center Press).

⁴⁶ In this task, we have found highly useful a two-volume treatment published in the mid-1980s in the journal *Daedalus, Journal of the American Academy of Arts and Sciences*. They were published under the titles *The Nordic Enigma* in the Winter 1984 issue and *Nordic Voices* in the Spring 1984 issue. Both were edited by Stephen R. Graubard.

⁴⁷ A caveat is in order here since several of our respondents from these countries disagreed with the interpretation given by Klinge. The Norwegian respondent disagreed strongly with my suggestion that the lyrics of the anthems represent an “ode to the North.” These sharp differences might be explained, in part, by a historical incident. The anthems were composed in the mid-19th Century when the ideal of a unified Scandinavia was held by many artists and writers. After the failure of others to come to the aid of Denmark when German troops invaded South Jutland in February 1864, despite commitments of mutual assistance in a military treaty between Norway, Sweden, and Denmark, the



Sweden was seen as one of the great powers of Europe, the North was often presented as a fertile and serene region, on the periphery of Europe and far removed from its troubles. Klinge observes that this escapist and romantic self-image persisted despite the fact that the North, in reality, had close contact with the rest of the European continent for centuries (p. 258).⁴⁸

For quite some time, however, the North saw itself as poor and peripheral to the rest of continental Europe. However, this vision was not homogeneous throughout the region. Klinge contrasts Finland and Norway with Sweden and Denmark. The Nordic-man image was stronger in the first two, in which egalitarianism was common, and, as parts of the old Swedish and Danish empires, their own historical centers were less prominent. After Denmark's loss of major power status in the 19th century, it reduced its concern with foreign affairs and colonial issues and focused on domestic matters centered on Copenhagen, now an imperial capital without an empire. Sweden also had an old capital city, a royal court, and an impressive military history, but its geography with forests on the periphery and vast uninhabited regions contributed to its own romantic self-image.

Although often forgotten today, and somewhat lessened in current history, the German influence in the development of Scandinavia has been profound. From the Middle Ages, German commercial interests played a major role, particularly in the cities along the Norwegian coast, in Denmark, and throughout the Baltic Sea region. German influence also was registered in the spread of Christianity into the region. German influence is readily traced in the development of the Nordic languages. Thus, German influences served as a funnel that linked the Northern countries to the

Pan-Scandinavian movement lost popular support. Thereafter, most persons in Nordic states increasingly viewed themselves as citizens of their respective countries.

⁴⁸ The balance of this section borrows freely from Klinge, and only specific quotations will be separately referenced, as will sources of broader treatments of specific topics introduced here.



culture, religion, and economies of the broader European continent (Klinge, 1984, pp. 260-263).⁴⁹

Klinge (1984) notes that in the 19th century, a movement for cultural and political unity was pressed, based on a “pretended linguistic unity” (p. 264). While conceding that Danish and Norwegian are relatively close linguistically, and that Swedish is the second language of Finland, he argues that linguistic unity is found only in certain social classes—for example, in university congresses and symposia, in the research and business communities—and that Nordic authors will be read in the other Scandinavian countries only in translated form (pp. 264-265). Almost without exception, however, our interview respondents cited similar languages as a component of Nordic characteristics. A semi-humorous comment by a Finnish respondent that the Nordics “had to take steps to prevent English from becoming the common Scandinavian tongue” raises an interesting point. If English, in fact, is moving to become the common Scandinavian language, then people will find it easier to communicate. However, the commonality of English spreads outside their borders, and, to that extent, language becomes less of a unifying factor that distinguishes Nordics from their fellow English-speaking neighbors.

Klinge is a historian and, hence, is prone to see historical factors as important in explaining characteristic patterns of thought and behavior. Thus, different historical experiences are likely to help understand current differences in viewing the desirability and likelihood of a possible Nordic defense bloc. He begins by comparing the Danish and Swedish empires. He reminds us that up to 1814, the Danish Empire extended out from Denmark to include Norway, Iceland, Greenland, the Faroe Islands, Schleswig and Holstein (to Hamburg). Prior to 1658, it also included the southern parts of Sweden. Also, by holding the titles of the Duke of Schleswig and the Count of Holstein, the Danish King was a German prince. In the

⁴⁹ Interestingly, in one of the interviews summarized below, the Swedes were described as “the Germans of Scandinavia” due to their penchant for neatness and hard work.



Middle Ages, Denmark exerted influence in Britain and later occupied Estonia. Despite early losses of possessions in the Gulf of Finland, it continued for centuries to control numerous important islands in the Baltic and off the coast of Estonia.

As an important player among the mercantile-focused, Protestant countries of Europe, Denmark had close connections with Holland and Britain and a unique connection to the German States. It also nurtured close relations with Russia, which often resulted in common alliances against Sweden. Beginning with the Napoleonic Wars, Denmark's empire began to fade with the loss of Norway, and, subsequently, Iceland, and most of its German possessions. Klinge (1984) describes Denmark as the most bourgeois and commercial country in Scandinavia (p. 265), but one which still retains its agricultural character and its Nordic identity.

He also writes of a Dano-Norwegian common past, which is reflected in aspects of the daily life in the two countries. Most importantly, this is seen in the role of institutions such as a “unified administration, legislation, and religion,” which allow both countries to share “essential concepts of religious, political, and judicial life” (Klinge, 1984, p. 266). For Norway, the city of Copenhagen was not only the regal center but also the heart of commercial activity and learning since it was the site of the only university in the Dano-Norwegian Kingdom.

While Norway was a kingdom in the Middle Ages, its independent political identity faded during its centuries as a part of Denmark. Also, since Finland had no history as a separate state before the 13th century, when it was amalgamated into the Kingdom of Sweden with what today constitutes the central provinces of modern Sweden, , its closeness with Sweden is long-standing.⁵⁰ Historically, this shared identity ended in 1809 during the Napoleonic Wars when the Kingdom of Sweden was divided and Russia occupied Finland. To some extent, this was a repetition of earlier actions following the Treaty of Nystad in 1721 when Sweden lost its Estonian

⁵⁰ Nevertheless, Dahl (1984) emphasizes the relative lack of common denominators for the political characteristics of Denmark, Finland, Norway, and Sweden (pp. 93-94).



and Livonian territories to Russia in addition to its Finnish-speaking regions of Ingria and Karelia. Ever since the rule of Peter the Great, Russia had seen itself as an evolving Baltic Sea nation, which cost Sweden the loss of its eastern regions (essentially Finland). Klinge describes this attachment to Russia as more of a military and strategic phenomenon than one that was cultural or administrative. Russian dominance in the Baltic area continued until the end of the 19th century when its position was challenged by the emergence of Wilhelminian Germany as a sea power (Klinge, 1984, p. 267). After the defeat of Germany in WWI, and after the Bolshevik Revolution left Russia in a weakened condition, the Baltic states and Finland declared their independence. The experience of WWII and its aftermath, however, left only Finland, of this group, unoccupied. Klinge attributes the uniqueness of Finland's situation to its geography, cultural and political traditions, and strong army (p. 268).⁵¹

The prevailing lesson of WWII for the Nordic states appeared to be “each country for itself.” According to Klinge, the post WWII period brought a recognition to its neighbors that Sweden had proven itself to be “a weak neighbor during the war years” (p. 270). Each then sought and found a more powerful and reliable source of support. For Denmark and Norway, it was NATO. Denmark also joined the EU, but with a proviso that it would not participate in EU military operations. Finland and Sweden also entered the EU, via the earlier European Free Trade Association. Interestingly, they all subsequently participated in various peacekeeping operations under the direction of the UN, EU, or NATO (with respect to Sweden and Finland, via the NATO Partnership for Peace Program). As previously stated, Iceland has no military forces; however, the country is a NATO member.

⁵¹ While Finland emerged from the war unoccupied, it was obliged to pay large reparations to the Soviet Union and, for decades, had to walk a tightrope in its commitment to neutrality and its efforts to avoid anything that might appear hostile to the USSR in its foreign policy. Only the demise of the USSR brought Finland true independence, in the eyes of many foreign observers.



The unreliability of Nordic neighbors as a source of support when pressed by a large and powerful neighbor was a lesson learned by both Finland and Denmark in 1939-1940. However, it was not a new experience. In 1863, when armed conflict erupted between Denmark and a large German force of Prussians and Austrians over the territory of Schleswig-Holstein, other Nordic countries supported Denmark verbally, but provided no material assistance. The decision of Sweden and Norway not to intervene has been described as “a final collapse of political Scandinavianism” (Klinge, 1984, p. 269).⁵² In 1939, as WWII loomed, a Nordic defense union was proposed, but the effort failed for fear that it was motivated primarily by a Finnish drive to obtain protection against a possible Russian invasion. The experience was repeated in 1949 when Sweden proposed a defense union with Denmark and Norway. The effort failed when the latter two joined NATO, presumably in search of a stronger union.

The foregoing section was an effort to present a brief account of the historical and cultural background of the Nordic region in order to identify what makes it distinctive from other areas. As it has been put, “We need to see whether the five countries of this region, for all their substantial similarities, are not also significantly different. The possibility that Iceland, Denmark, Norway, Sweden, and Finland are no more like one another than the United Kingdom, France, Germany, Italy, and the Netherlands needs at least to be entertained. The task is to tell them apart, to know why and how each differs from the other” (Graubard, 1984, p. ix). That was the goal statement of the two-volume study referred to in the footnote above. Our effort, which is to provide a simple description of the background from which the following interview materials were drawn, is much more modest in time, resources, and expertise. The interested reader is encouraged to consult these volumes, which

⁵² However, a caveat is necessary here. During WWI, Sweden remained neutral and continued to trade freely with the belligerent countries. The Allied Powers imposed a blockade that seriously interfered with Sweden’s trade and brought food shortages and other hardships to the country. Norway and Denmark entered into an agreement with Sweden in defense of Swedish neutrality and to protect the joint economic interests of the Nordic countries (“Sweden,” DATE).



constitute a treasure chest of fascinating materials and valuable references. Of course, they were published 25 years ago and while not diminishing the value of the historical material, means they omit more recent developments. The following section is a modest effort to continue the story.

B. Recent Developments

We have selected three efforts at collective action during the post-WWII period for examination: the formation of the Nordic Council, the establishment of a Nordic Supportive Defense Structure, and the publication of the Stoltenberg report and recommendations.

C. Nordic Council

The Ministers of Justice of Denmark, Norway, and Sweden established a committee in 1946 to examine the possibilities of future legislative cooperation in their region. The Nordic Council and the Nordic Council of Ministers were established in 1953, with Finland joining in 1956.⁵³ The Nordic Council was to function as an intergovernmental forum for cooperation, with the goal of enabling Nordic parliamentarians to assume a more active role in developing a cooperative approach to legislation. Its first accomplishment was to establish a common labor market with free passage (no passports required) for citizens across borders.

Currently, the Council consists of 87 members, elected from among the members of the respective national parliaments. The composition of the Council is designed to reflect the representation of the political parties in their national parliaments. During the 1960s, plans were underway to convert Nordic cooperation into an economic and trade-regulating organization, similar to the (then) European Economic Community (EEC). It got as far as the negotiation of a treaty, establishing a new organization to be called NORDEK, with headquarters in Sweden. Finland

⁵³ Wikipedia, Nordic Council, accessed 15 December 2009.



finally found itself unable to ratify the treaty due to its special relationship with the USSR. Without Finland, the treaty became inoperable, and Norway and Denmark applied for membership in the EEC. Denmark became a member in 1973, but a popular referendum in Norway rejected the idea in the same year. Norway remains outside the EU. Concurrently, Finland negotiated a free-trade treaty with the EEC, and both Finland and Sweden finally joined the EU in 1995.

The Nordic Council has become relatively inactive, as many of its originally planned functions have been absorbed by the EU and its treaties with non-member countries. Nevertheless, the Baltic states of Estonia, Latvia, and Lithuania have expressed interest in joining the Council.

The Council lacks formal power on its own, and each member government must implement its decisions through its own legislative assembly. Given the status of Denmark, Norway, and Iceland as members of NATO, and the neutral status of Sweden and Finland, the Nordic Council has avoided any efforts at military cooperation.

D. Nordic Supportive Defense Structures

In recent years, the Nordic countries have engaged in comprehensive defense cooperation. These efforts have followed three separate tracks: Nordic Armaments Cooperation (NORDAC) since 1994, Nordic Coordinated Arrangement for Military Peace Support (NORDCAPS) since 1997, and Nordic Supportive Defense Structures (NORDSUP) since 2008.

The Nordic defense ministers held a meeting on May 12, 2009, in Kotka, Finland, at which they decided to merge the previously independent arrangements into one structure that incorporates defense policy, capability development, and crisis management operations. At a subsequent meeting, a memorandum of Agreement was negotiated, which was due to be signed in early November 2009. When it enters into effect, it will supersede prior MOUs, which created the earlier organizations, and establish one group, the Nordic Defence Cooperation structure



(NORDEFECO), which is expected to begin functioning early in 2010. It has been designed to enhance cost-effectiveness, reduce overlapping between structures, and permit consistent political steering and military coordination in all areas of cooperation (O'Dwyer, 2009, November 16; 2009, December 7).

At the May 2009 meeting, the ministers also considered security developments in Northern Europe and discussed the ongoing defense transformation processes, as well as possibilities for Nordic cooperation in the High North and the Baltic Sea (Finland Ministry of Defence, 2009).

Much of this activity traces back to a Swedish-Norwegian feasibility study by the two Chiefs of Defense in August 2007. This bilateral report was followed by a trilateral report (now including Finland) submitted by the Chiefs of Defense to their ministers in June 2008, which included 140 possible areas for cooperation. Of this number, some 40 were selected for implementation during 2009.

Projects underway include joint equipment procurement, training and exercises, sharing of intelligence, logistics, and improved collaboration among naval, air, and land forces of the four states. Cooperative land force projects include attainment of a platform for common contributions in international operations and the maximization of conformity in land warfare systems, focusing on artillery, light infantry, and mechanized units.⁵⁴

Specific reactions to the NORDSUP program appear below in the interview materials.

E. The Stoltenberg Report and Recommendations

In June 2008, the Nordic foreign ministers commissioned Thorvald Stoltenberg, former Minister for Foreign Affairs and Defence of Norway, to prepare a

⁵⁴ For further details by service branch see Gerard O'Dwyer (2009, June 29).



report examining possibilities for Nordic cooperation on foreign and security policy during the next 10-15 years. His report, together with recommendations, was presented in Oslo on February 9, 2009, to an extraordinary meeting of Nordic foreign ministers (Stoltenberg, 2009).

The report begins with the main points that emerged from Stoltenberg's meetings throughout the Nordic countries. His main points are as follows:

- "There is a widespread desire in all the Nordic countries to strengthen Nordic cooperation.
- There is a widely held perception that because of their geographic proximity, the Nordic countries have many foreign and security interests in common, despite their different forms of association with the EU and NATO.
- There is a widely held view that the Nordic region is becoming increasingly important in geopolitical and strategic terms. This is a result of the role of the Nordic seas as a production and transit area for gas for European markets and of the changes taking place in the Arctic.
- The EU and NATO are showing a growing interest in regional cooperation between member states and non-member states.
- All the Nordic countries are willing to cooperate with the UN. There is a widespread interest in expanding the Nordic-force contribution to UN operations on the basis of current needs and the comparative advantages of the Nordic countries.
- The Finnish, Norwegian, and Swedish chiefs of defence have recently drawn up a report containing proposals for cooperation to ensure that their defence budgets are used as cost effectively as possible. Modern defence technology is becoming increasingly expensive, making it more difficult for individual countries to fund a modern defence system. This, in itself, creates a need for Nordic cooperation in the defence sector. I have found the report from the chiefs of defence valuable in my work.
- The Nordic countries are responsible for the management of large sea areas. Climate change and melting of the sea ice will open the way for considerable activity in these areas, including new shipping routes



through Arctic waters to the Pacific Ocean. This means that Nordic cooperation in the northern seas and the Arctic is highly relevant.”

On the basis of these findings, Stoltenberg presented 13 specific proposals for strengthening Nordic cooperation, as follows:

1. “A Nordic stabilization task force should be established that can be deployed to states affected by major internal unrest or other critical situations in which international assistance is desirable.
2. The Nordic countries should take on part of the responsibility for air surveillance and air patrolling over Iceland.
3. A Nordic system should be established for monitoring and early warning in the Nordic sea areas. The system should, in principle, be civilian and be designed for tasks such as monitoring the marine environment and pollution and monitoring civilian traffic.
4. Once a Nordic maritime monitoring system is in place, a Nordic maritime response force should be established, consisting of elements from the Nordic countries’ coast guards and rescue services.
5. By 2020, a Nordic polar-orbit satellite system should be established in connection with the development of a Nordic maritime monitoring system.
6. The Nordic countries, which are all members of the Arctic Council, should develop cooperation on Arctic issues, focusing on more practical matters. The environment, climate change, maritime safety, and search and rescue services are appropriate areas for such cooperation.
7. A Nordic resource network should be established to defend the Nordic countries against cyber attacks.
8. A Nordic disaster-response unit should be established for dealing with large-scale disasters and accidents in the Nordic region and in other countries.



9. A joint investigation unit should be established to coordinate the Nordic countries' investigation of genocide, crimes against humanity, and war crimes committed by persons residing in the Nordic countries.
10. In countries and areas where no Nordic country has an embassy or consulate general, the countries could establish and run joint diplomatic and consular missions.
11. The Nordic countries should strengthen their defence cooperation on medical services, education, materiel, and exercise ranges.
12. A Nordic amphibious unit should be established based on existing units and the current cooperation between Sweden and Finland.
13. The Nordic governments should issue a mutual declaration of solidarity in which they commit themselves to clarifying how they would respond if a Nordic country were subject to external attack or undue pressure.”

As with the other programs described above, interview respondents expressed different views about Stoltenberg's recommendations. All seemed to agree that they were only marginally related to defense issues, and some had cynical reactions to the suggestion of a mutual declaration of solidarity. Interview responses in the following section provide more specifics.

F. Conclusions

Our conclusions begin by distinguishing between examining the likelihood of the Nordic states merging to become a single Nordic country, and the likelihood of their retaining their independence but establishing a Nordic defense alliance. It is the latter question with which we have been concerned.

As noted above, any movement towards a political Scandinavianism is a lost cause. As Mead (1984) has observed,

For all the common challenges presented by the physical environment, for all the common pressures of the geopolitical setting, for all the proved benefits of an integrated economy and society, any form of political unity in Norden has



been and remains a chimera. The map of Northern Europe shows five countries, and it is unlikely to change. [...] Harmony exists between the countries of Norden, but each state is a unique entity, steeped in its own mythologies, its inhabitants harboring emotions born of experiences particular to the terrains and territories of their homelands. Whatever else may be said, geography-the space they occupy on the globe-is the final arbiter of their individual and collective fates. (p. 27)⁵⁵

For the purposes of this inquiry, the more relevant question is what do these countries hold in common and is it strong enough to encourage a defense alliance? As Mead notes, no “index of nordicity” exists (p. 1). McFate (1984) finds the term “Nordic family” helpful in understanding the relationship among the Nordic countries. As she has observed,

The Nordic peoples’ sense of kinship is not unlike that of the Arabs, for all the apparent dissimilarities in the two peoples. The two sets of countries speak exotic languages, binding them in their belief that only they can completely understand one another. (They are also bound by religious, historical, and geographical ties.) [...] A Pan-Arabic union will never be possible, but there is something deeper and more mysterious that allows Arabs to think of themselves as united against others. So, too, the Nordic peoples present a united front to the world no matter how much they argue with one another within the “family”. Clearly the Arabs and the Nordics know the reference group to which they belong. (p. 54)⁵⁶

It should again be emphasized that the Mead and McFate papers were published 25 years ago; and, while the points presented are still challenging and worthy of attention, this particular 25-year period has seen what might be described as a world of difference. As has been noted above, today’s “exotic” Nordic language is English. Historical experience has apparently convinced many Nordics that “going

⁵⁵ A caveat might be necessary here, however, in view of the contention by Awell-Koo Swedish writer Gunnar Wetterberg that a credible , effective regional defense system requires a “single-country federal-structure.” He claims that a federal system, similar perhaps to Switzerland, would help achieve more successful defense cooperation. In his view, such as federal Nordic state would enjoy a “strong international position of power (as) the 10th-biggest economy in the world, ahead of Canada, (give it) a space at the G20 Table, and ... would make the Nordic Region far more influential than its five separate nation states are today.” Thus far, Wetterberg’s suggestion has a cool reception from the Nordic Council.” O’Dwyer, 15 February 2010, p. 22.

⁵⁶One of our interview respondents described the Swedes as frequently acting like the “big brother.”



it alone,” or seeking assistance from sources outside the family may be preferable in times of trouble. This observation is consistent with the prevailing attitude expressed in the interviews reported below.

Sweden has been the most active advocate of a Pan-Nordic approach to defense production and acquisition. Hagelin’s examination of defense trade patterns by the Nordic states yields some interesting information on this topic.⁵⁷ According to SIPRI data, in the 1993-2003 period, direct deliveries of major weapon systems between Nordic countries were relatively low. Such deliveries in the Sweden-to-Norway direction accounted for 20% of all Swedish arms exports; from Finland to Sweden, 29% of all Finnish deliveries; and, from Finland to Norway, 15% of Finnish deliveries. Swedish deliveries to Norway in this period included combat vehicles, fire control radars, surveillance radars, artillery hunting radars, and portable air defense missile systems. During the same interval, Finland delivered personnel carriers to Norway and Sweden.

Viewed from the importer’s perspective, Sweden has been a relatively important supplier for Norway, accounting for 24% of Norway’s major arms imports. Although Denmark provided no major weapons to another Nordic country during these years, something in excess of 80% of the sales of Terma, Denmark’s largest aerospace firm, went abroad to non-Nordic countries.

Hagelin (2006) has described the Norway/Sweden traffic as the “core axis” of Nordic major arms transfers (p. 168). Other bilateral intra-Nordic major arms transfers represented fewer than 10% of total bilateral deliveries. Sweden’s strength as a supplier reflects the size of its defense industry and its advanced defense industrial base. Another reason for the importance of Swedish defense exports to the Nordic area is found in official government policy during the Cold War years,

⁵⁷ We have borrowed freely in this section from the excellent work by Bjorn Hagelin (2006).



which stressed the idea that Swedish neutrality policy was strengthened by focusing its defense exports on other neutral countries and other Nordic states.

The situation has changed drastically since the end of the Cold War. As noted above, Sweden's current defense and security policy increasingly focuses on international rather than national paths. The result has been a significant decline in the importance of the intra-Nordic market for major arms, coupled with an expansion in Nordic arms shipments to destinations outside the Nordic area. For example, the intra-Nordic share of Norway's total defense sales fell from approximately 30% in 1999 to less than 10% in 2003. The same percentages apply to the reduction in Sweden's intra-Nordic share of its arms exports.

Hagelin (2006) notes that this phenomenon occurred at about the same time the NORDAC Agreement went into effect, with its emphasis on defense cost-sharing and support for a Nordic defense industrial base (p. 169). He doubts claims of success for the NORDAC program and notes that such benefits as may have been obtained have not been shared equally among the participants. This may be inevitable since reliance upon Sweden's important defense industrial position may be a necessary part of any sub-regional Nordic arms market.

Non-Nordic arms suppliers have always been more important sources of major weapons to individual Nordic nations than fellow Nordic states. SIPRI data for the 1993-2003 period show the US as the principal supplier of major weapons to the Nordic states, representing 43% of Danish arms imports, 74% of Finnish, and 46% of Norwegian. Sweden was an exception, as Germany was the source of 72% of its weapons imports, but this apparently represented Swedish purchase and manufacture under license of German tanks at the time. If this special circumstance were omitted, the U.S. would also have ranked as Sweden's principal supplier (Hagelin, 2006, p. 175).

When examined as arms exporters, the Nordic countries demonstrate significant differences. Sweden leads. Norway ranks second, but its export volume



is only about half that of Sweden. Both ranked among the 15 largest suppliers in the 1999-2003 period, with Denmark and Finland far behind Norway (Hagelin, 2006, p. 177). Of the group, Sweden is the only country with indigenous industry capable of produced advanced combat aircraft. It is also the only Nordic member of the 2000 Framework Agreement on the restructuring of the European defense industry. In this agreement, Sweden is partnered with France, Germany, Italy, Spain, and the UK. Sweden has also moved from bilateral to multilateral defense industrial cooperation in research and development activities (pp. 175-177).

All things considered, if an intra-Nordic arms market would require regular balanced transfers of significant volumes of major weapons between the Nordic countries, it doesn't exist at this time and is unlikely to develop in the future. Such cooperation as exists doesn't usually involve the four countries with their own defense industries. Major imbalances exist in Nordic arms cooperation. One is found in Swedish dominance, resulting from its relatively large and modern defense industrial base and associated research capabilities. However, Swedish government policy is now aimed at a reduction in the scope of its R&D activities to focus on a niche level of competence, to be obtained through international cooperation and hoped-for civil-military synergies. This suggests a growth in arms imports and closer cooperation with its Framework Agreement partners rather than its Nordic neighbors.⁵⁸ Another source of imbalance rests in the smallness of Denmark. Its relatively small volume of arms exports accounts for its insignificant role in intra-Nordic defense trade

In view of this pattern of trade, Hagelin (2006) believes that a modest program

⁵⁸ A somewhat modified Swedish defense-procurement policy was publicized in September 2009 that encourages much greater dependence on off-the-shelf purchases, where satisfactory (domestic or foreign), and encourages much greater reliance on international partners for development work. Greater emphasis on export sales was also encouraged (O'Dwyer, 2009, September 21).



“...for sharing operational and technical experiences and test results, as well as establishing joint or common maintenance and support arrangements for identical equipment in the national inventories, seems to offer a more practical route to intra-Nordic cooperation than reaching agreement on common or joint procurement of major weapons. (p. 180)

Another consideration that requires attention deals with the relationship between a sub-regional Nordic defense equipment program and the EU. Thus far, we have focused on the Nordic states, but completeness also entails consideration of developments within the EU. If the EU sets a defense goal of moving in the direction of maximum cost-effectiveness, then intra-Nordic defense cooperation will survive only if its activities are consistent with that goal. If the sub-regional organization focuses on protection of its companies, structures, and projects, then attainment of the EU-wide goal will be frustrated. Sacrifice of local interests in pursuit of a more general objective does not have a long history of success. On the other hand, EU goals are likely to be fashioned by the more important and powerful members and their industries. A conflict is certain if Nordic armaments cooperation requires the acceptance of its imbalances by governments and armed forces in the presence of superior benefits from an EU (or US) alternative.

After a detailed examination of the situation, Hagelin (2006) concludes as follows:

The role of a specific intra-Nordic arms market is likely to be reduced as the region's governments and industries become more involved in “European” defence political and defence industrial structures, ambitions and projects. While Finland keeps the option of NATO membership open, the Swedish Government's rhetoric of military non-alignment is becoming less and less convincing. The political and military ambition to sustain close defence technological relations with the USA will remain strong in Sweden, especially, if the EDA and “European” undertakings show limited success. This could influence Sweden's choices between European and transatlantic equipment solutions in favour of the latter, with both alternatives reducing Sweden's interest in Nordic solutions, thereby also limiting the *raison d'être* of Nordic alternatives for the other Nordic countries. (p. 184)

Michael Brzoska (2006), a fellow author in the same volume as the work by Hagelin, reminds us that however much the defense market reflects commercial



concerns, at its core, it remains political. This is emphasized in the Swedish interview below. In his own words, according to Brzoska, “It reveals a multifaceted reality in which ambitions and capacities, intentions and outcomes, statements and actions often conflict” (p. 185).

In contrast to the preceding statistics on Nordic defense trade, Brzoska restricts his comparisons to such trade between the Nordic states and the EU as a whole, and also with such major EU states as France, Germany, and the UK. His results indicate that the Nordic countries are significant markets for the Finnish (68% in 2002) and Swedish (42%) defense industries, but much less so for the Danish defense industry (16%). Nevertheless, the Danish figure is considerably larger than that of the total EU (5%). Of the principal EU producers, Germany ranked first with almost 9% of its defense exports going to the Nordic four.

When the analysis is reversed to show what share of defense equipment imports going into the total EU originated in the Nordic countries, the results are similar. Thus, while total EU imports of defense equipment from the Nordic four accounted only for 3.8% of imports from EU states, Finnish imports from the Nordic states accounted for 76% of its total defense imports from the EU states in the aggregate. Corresponding figures for Sweden and Norway were 15% and 11% respectively. Denmark’s 4% figure is very similar to the figure for all EU states in the aggregate. These figures resemble those given by Hagelin in attesting to the fact that the Nordic dimension is very important for Finland, while of no particular importance for Denmark. Norway and Sweden occupy intermediate positions (Brzoska, 2006, pp. 190-191).

Swedish industry’s dominance in the Nordic area is reflected not only in its sales position but also in its equity capital links with major firms in the UK, Germany, and the US. Its international focus is reflected by its presence in international defense institutions like the 2000 Framework Agreement on the restructuring of the European defense industry. Brzoska joins others who see Sweden’s defense industry as continuing to move toward wider participation in European defense



industrial issues. Swedish industry's interest in Nordic connections will remain, particularly in niche production areas in which technology of interest will retain its attention. Finland, and to some extent, Norway, will continue as customers for Swedish industry as they strengthen Sweden's position inside their industrial partnerships.

Creating a common Nordic platform in furtherance of Nordic interests within the European defense market is not the primary motive for maintaining present Nordic links. Rather, it would appear to be an industrial logic with two goals: Swedish desire to maintain a strong defense industry—to remain among the top six or so major European defense voices—and to protect medium-sized producers in Finland and Norway from strong competition abroad.

Brzoska, while seeing the Nordic group as responding to industrial and institutional developments in Europe, still sees a potential advantage in nurturing a Nordic dimension in areas of defense production in which additional European defense industrial integration appears to be moving in a direction of monopoly influence (2006, p. 192).

A more skeptical view of the desirability of maintaining a Nordic dimension in defense production has been expressed in private correspondence by a well-known student of defense production who has written on Swedish military developments:

I haven't done much of anything on Swedish or Nordic defense in about five years. Mostly, it's depressing, 'cause the budgets keep getting sliced, so defense in the region is death by a thousand cuts. [...] [A]lso, I've always wondered WHY the Nordic states feel compelled to cooperate with each other on procurement programs (e.g., the Viking sub, the NH-90 helo). In most cases, these efforts seem to have come to naught, and it's never clear to me that these states actually have much in common when it comes to defense needs. (Norway, for example, is more sea-oriented; Finland is mostly land-based; Sweden is mostly geared these days to international peacekeeping, etc.) Cooperation appears to be more culturally driven than based on actual defense requirements.



G. Nordic Interviews

The authors conducted two series of meetings, one in the spring and the other in early summer of 2009, at the Washington embassies of Denmark, Finland, Norway, and Sweden. Interviews were held with knowledgeable and experienced officials posted to these embassies, usually associated with the respective Ministries of Defense and/or Foreign Relations. In at least one case, an official from the nation's capital who was, by chance, visiting their embassy also participated in the meetings -- as did officials of a major defense firm. In all cases, a guarantee of confidentiality and non-attribution was a ground rule.

The comments exchanged often dealt with important historical and current events, which served to illustrate the position of the speaker on the issue of a Nordic defense bloc. The meetings were conducted in a free flowing manner and, with the exception of a few critical points that were introduced through the meetings, no effort was made to hold the comments to a narrow and tightly defined outline. In each case, telephone conversations followed the meetings to clarify interview notes. Without exception, the respondents were most generous with their time and spoke frankly and at length on issues that were, to some extent, of a highly sensitive nature.

1. Denmark

Discussions began with an emphasis by our respondents that despite the attention given in the press and in meetings to the concept of a strong commonality linking the Nordic states, in reality, there are significant differences among them that must be recognized. In order to understand their policies. The respondents noted that while all four states have participated, for example, in organizations like the Nordic Council, their membership in different military and security institutions such as NATO and the EU limits the extent to which military cooperation is possible. A caveat was added, however: nothing prevents joint decisions when that seems desirable on operational or financial grounds.



Recent history, however, plays a role here, such as Danish exercises in northern Germany and Jutland with German and British forces during the Cold War years when use of common equipment and logistics seemed desirable. Thus, Danish forces used German Leopard I and II tanks and armored personnel carriers as well as US F-16 aircraft. This experience left the Danes feeling closer to Germany, the UK, and the US militarily than to Sweden and Finland. Again, this is not to say that the Danes would reject common Nordic approaches that appear sensible and efficient. This would be particularly attractive within a UN framework. Thus, common training is under way in Finland for the training of forward observers and in Denmark for military police who might be used in peacekeeping operations.

During the past 15 to 20 years, however, the Danes have sensed a diminution in Nordic cooperation. In recent years, Danish military attention has been focused on operations with US and UK forces in Iraq and Afghanistan. However, Danish troops participated with the Nordic battalion in the IFOR force in the former Yugoslavia. We were reminded that a combined Swedish-Danish infantry battalion operated in Bosnia, where Finland also contributed a construction battalion and a field hospital.

The operation in the former Yugoslavia presents an interesting example of how membership in different organizations can affect military operations on the ground. Once the command of IFOR was transferred from NATO to the EU, Danish participation came to an end because its membership in the EU had three conditions attached: no participation in EU military operations, no participation in a combined monetary unit, and no participation in police or juridical affairs. The first of these conditions prohibited further Danish participation.

Our respondents noted the addition of Denmark to the Nordic Defense Collaboration Project's Nordic Supportive Defense Structures Cooperation (NORDSUP) in late 2008, an organization that is attempting to revitalize Nordic cooperation on defense issues. A major objective of such a cooperative structure would be to focus on UN crisis management in Africa. Apparently, an earlier UN



effort to organize a Nordic mission for the Sudan and east Africa in general, which would have introduced Nordic forces into that area, failed. Currently, efforts are underway to establish training of Africa's own troops by Nordic forces.

Two areas closer to home are also sources of concern: the Baltic Sea region and the High North Arctic zone. While Sweden, Finland, and the Baltic states have a more direct location on the Baltic, Denmark joins Norway and Sweden in controlling the strategic waterway from the Baltic through the North Sea to the Atlantic Ocean. The UK and Iceland also occupy strategically valuable locations in that general area. Geography here would appear to impose a common security concern, independent of formal treaty obligations.

Another area of growing concern is the Polar region. A total of eight states would appear to have a potential interest there: the Nordic four, (Denmark via Greenland and the Faroe Islands), Iceland, Russia, the US, and Canada.⁵⁹ While the area has been essentially peaceful, the need for a military presence has become an issue of growing importance. Thus far, surveillance efforts have been linked to the functions of search and rescue.

Potential sources of conflict in the Arctic area lie in conflicting claims to natural resources such as oil, which have been located in the seabed, in some case along the continental shelf. Disagreement as to the exact location of national boundaries and areas of sovereignty remain to be settled. As noted above, Denmark's interest in the Far North centers on untapped oil and gas reserves located in territorial waters off Greenland and the Faroe Islands, both self-governing dependencies of Denmark. A recent study by the Danish Geological Survey estimated that approximately 90 billion tons of oil and trillions of tons of natural gas are to be found in designated zones in the Arctic, 10% of which are estimated to be found in the area of Danish Greenland. Denmark also claims rights to other areas

⁵⁹ These eight are member states of the Arctic Council, mentioned above in recommendation six of the Stoltenberg Report.



located north and west of Greenland that are suspected to hold additional resources (O'Dwyer, 2009, August 3). This development, plus substantial growth expected in maritime traffic in the Arctic Sea resulting from melting ice in the area, played a role in the recent recommendation in the 2008 Defense Commission Report to the Danish Ministry of Defense for an enhanced level of defense capability in the Arctic region. Among its recommendations were (a) the creation of an Arctic Military Command Structure, (b) the provision of adequate funding to support enhanced capability in the Arctic, and (c) an analysis of possible closer cooperation with other Nordic countries, and possibly the US and Canada, to ensure an adequate level of surveillance and related functions. These recommendations elicited a rather sharp response from a spokesman for the Russian Ministry of Foreign Affairs, which stressed the mutual interests of countries bordering the Arctic in maintaining the area as "a zone of peace and cooperation" (O'Dwyer, 2009, August 3). A subsequent report from the Danish Defense Intelligence Agency in early September warned of possible conflicts concerning territorial rights and natural resources and spoke of Russia's "conspicuous Arctic expansionism" (O'Dwyer, 2009, September 28). This potential conflict area warrants attention.

Our respondent asserted the belief that cooperation in matters of common concern would not be inhibited by legalities resulting from overlapping formal treaties. He expressed confidence that a hypothetical Russian attack on Norway could bring aid to Norway from Sweden and Finland, and certainly assistance from other NATO states operating under the Article 5 pledge of mutual assistance. He also mentioned the long-lived rumor that if and when Finland joins NATO, Sweden would follow.⁶⁰ Apparently, the current view is that such a move by Finland will be more likely at the conclusion of the present term in office of the current Finnish president.

⁶⁰ For a well-argued case supporting a decision by the Nordic neutrals to join NATO, see Ingemar Dorfer (1997).



With respect to the purchase and use of military equipment, this respondent cautioned against singling out particular cases as evidence of Nordic cooperation growing out of a common ideology or tradition. Thus, the purchase by the Danish armed forces of the Swedish CV-90 (a turreted infantry fighting vehicle) represented a belief that it was the best deal available to meet a particular need, independent of its Swedish origin. Other users of the Swedish CV-90 include Norway, Finland, the Netherlands, and Switzerland. Prior to the F-16 days, Danish forces operated the Swedish Draken and the US F-104.

Interest in the decision about a replacement for the current F-16 fleet is high in Denmark. Successor aircraft will need to be operational by 2020. Some time will be required after the decision is announced to prepare for the 2020 introduction. Issues of production, doctrine, training, and logistics will have to be settled. A special project group on replacement fighter aircraft is expected to reach a decision in the fall of 2009 on the type of aircraft to be selected.⁶¹ Four or five considerations will play a role in the final choice. These include issues of commercial and industrial participation.⁶² Although during the last five years Denmark has partnered with the US on the Joint Strike Fighter project, a final decision has yet to be made, and, at present, the Swedish Gripen and the Boeing F/A-18 E/F Super Hornet are still in the running. In addition to reaching a decision on the identity of the winning aircraft, the group must establish the number of aircraft Denmark should order. Our respondent doubted that the present 48-plane F-16 fleet would be replaced on a one-for-one basis, and a smaller number of more capable, modern aircraft might be adequate to fulfill the present missions. However, if, in fact, some of the possible changes in the strategic environment noted above develop, then the required number may not vary much from the size of the present inventory.

⁶¹ In late October 2009, the Danish Defense Ministry announced a delay in the fighter replacement decision until sometime in 2010 due to concerns over cost overruns in the JSF program (O'Dwyer, 2009, November 2,).



Another interesting field for cooperation opened in 1990, when the Baltic states obtained their independence from the former Soviet Union. Historically, the Baltic nations had long maintained a close commercial link with the Nordic states, and this was reflected in the strong support and assistance they received when they emerged from many years of Soviet domination. The assistance included aid in restoring the military capability of the Baltic states, all of which joined NATO within a few years and now maintain a Baltic Defense Cooperation Council, an intergovernmental organization for cross-border military cooperation.⁶³

At the time of this writing, the most current example of Nordic-Baltic cooperation was the recently announced decision by Finland to include Estonia in its \$1 billion National Air Defenses Modernization Plan, designed to upgrade the Finnish Army's ability to counter hostile air attacks and to allow Finnish and Estonian forces to coordinate air-defense strategies. The system will dramatically extend Finland's air-surveillance coverage beyond the Gulf of Finland, far into the Baltic Sea. The Estonian Army will gain access to the most modern medium-range air-surveillance system and at substantial savings over an independent purchase. The equipment will be provided by Thales-Raytheon-Systems and includes a mid-life upgrade for Finland's air defense radar. Finland's domestic industry will participate, and local suppliers are to include Sisu Defence, Insta DefSec, and Patria (O'Dwyer, 2009, October 5).

One of our respondents concluded the meeting by observing that while closely intertwined, historically, there has always been a geographic difference in their respective foci, with Sweden and Finland facing East, while Norway and Denmark have faced West. This "positioning" difference derives from causes as far back as the sailing of the Vikings from their respective regions. Still, he believes

⁶²For an outstanding analysis of the problems faced by a smaller country in reaching such a decision, see Mikkel Vedby Rasmussen and Henrick O. Breitenbauch (2007).

⁶³ For an interesting story about Baltic military cooperation, see Gerard O'Dwyer (2009, July 13).



that while difficult to clearly define, a Nordic identity does exist, to some extent, at an emotional level. Interestingly, the various staff members of the Nordic embassies in Washington maintain a luncheon club that meets several times a year, and, in Berlin, the Nordic countries house their embassies in the same building, the construction of which was financed by their collective contributions.

2. Finland

Lodged as it is between Sweden and Russia, geography has been at the root of much of Finnish history. It was a part of the Kingdom of Sweden from 1352 until 1808, and it was an autonomous Grand Duchy within the Russian empire from 1809 to 1917, when it became an independent republic by breaking away during the Bolshevik Revolution. This resulted in a civil war between the reds (communists) and the whites (mixed right-wing, liberal, and centrist groups allied against the reds). They were supported, respectively, by Bolshevik Russia and the German Empire. Eventually, the war was won by the whites, and the Independent Republic of Finland emerged (“Military History of Finland,” accessed 9 August 2009).

Today, Swedish is the second language in Finland. It is a required subject of study in Finnish schools and all official government documents must be published in both languages. All applicants for government jobs are required to be fluent in Swedish. However, the usage of the Swedish language varies by region in Finland, ranging from areas where Swedish is almost the first language to other more inland and remote areas where there is no need to speak Swedish, and its use diminishes.

During World War II, Finland had the experience of fighting against both Soviet Russia and Nazi Germany. The Soviets invaded Finland in 1939, in what the Finns call the Winter War. After what the world viewed as a remarkably stout defense, the Finns were forced to surrender after 105 days (“Military History of Finland,” accessed 9 August 2009). During the fighting, a Swedish volunteer force joined the Finns. It included a Swedish aircraft squadron, which operated from Lapland in the far north of the country. After the German invasion of the Soviet



Union in 1941, Finland entered the war in an effort to recover territories they had lost to Soviet Russia during the Winter War. According to our respondent, the decision to enter on the side of Germany was apparently related to the fact that Finnish supplies came by sea, which the Germans controlled. This second conflict is known in Finland as the Continuation War, and it lasted until the fall of 1944. Apparently, the Swedes also played a useful role in arranging the peace talks with the Soviets. When the Finns left the war against Russia, they found it necessary to force the evacuation of German troops from Lapland. This conflict is known in Finland as the Lapland War.

Whether these two acts of assistance by Sweden to Finland in a time of trouble should be viewed as a reflection of a Pan-Nordic spirit or, simply, as help to a close neighbor is impossible to determine. What we know is that no other Nordic state provided such organized assistance during the Winter War, although individual volunteers from sister states did serve.

Finland has remained technically neutral, or non-aligned, since the end of WWII, but the situation has changed somewhat in more recent years. Through most of the Cold War period, Finland found it necessary to walk a very narrow line due to its special relationship with Soviet Russia. This effort not to offend the Soviets earned the title of “Finlandization.” With the demise of the Soviet Union, Finland has found it possible to behave more independently, as is evident from its joining the EU and the NATO-affiliated Partnership for Peace.

This new sense of independence was also reflected in Finland’s modernization of its armed forces. In 1997, Dorfer observed the following: “While its Nordic neighbors disarmed in the 1980s and 1990s, Finland armed. By 1996 it had developed the largest and best equipped army among the Nordic states, a modern navy, and an Air Force that soon will consist of 64 F/A-18C Hornets, the most potent combat aircraft in the region” (Dorfer, 1997, p. 42). The pre-F/A-18 Finnish air force consisted of two squadrons of Swedish Drakens and one squadron of Russian MIG-21s. This improvement could have been seen as considerable. Dorfer wrote, “With



the Hornet, of course, comes equipment, armaments, advanced medium-range air-to-air missiles (AMRAAM), and all the other things that follow a big weapon system” (p. 48). Thus, interoperability with NATO aircraft was dramatically enhanced.

Our respondents expressed a high level of satisfaction with the F/A-18 project. They noted that the acquisition was completed “below budget and ahead of schedule.” The aircraft was obtained via the Foreign Military Sales (FMS) program, guided by the US Navy. Its primary mission was to carry out the fighter role, rather than air-to-ground attack. At the time, other competing aircraft included the F-16, the Mirage 2000, and the Gripen. Russia offered the MIG-29, but the Finns never requested a formal competitive bid. The Gripen version then available did not meet Finnish requirements. All branches of the Finnish armed forces did not agree on the superiority of the F/A-18, but our respondent noted that “the pilots got what they wanted.” The twin-engine characteristic of the F/A-18 was found attractive, as was its ability to take off and land from Finnish highways. Another important consideration was the fact that over 1,000 of that aircraft had already been produced by the US manufacturer. One respondent added that the F/A-18 appeared to “offer the most operational bang for the buck,” and that expectation apparently has been realized.

The purchase exceeded the threshold for industrial participation (€10 million), and our respondents expressed a high level of satisfaction with the operation of the program. They described the program as not being a classical offsets arrangement, as the system provides a capability to support the aircraft. The Finns have the capability to provide testing and maintenance of the equipment plus necessary training, and both airframes and engines are assembled in Finland. It was also noted that while the EU has a *Code of Conduct* that removes offsets from the internal EU market, Article 296 provides an exemption from competition for items of national security. The Code of Conduct is voluntary, but Finland has agreed to adhere to it. However, the Finnish *Directive of Defense Procurement* is mandatory.



All F/A-18Cs and Ds are to undergo a mid-life updating with improved engines and radars. Some late model Cs and Ds are being prepared now, with the Finnish firm Patria installing the electronics. The US Navy has developed all the software. Some of the equipment is being obtained from other countries. While still pre-Super Hornet, these aircraft will be capable of operating at a very high level. The updating will be done in two stages. As noted above, the Finns originally planned to utilize their F/A-18s in an air-to-air role. The first stage will focus on introducing improvements for that role, and it is expected to be completed by March 2010. The second stage will introduce air-to-ground capabilities, and that is expected to be undertaken in the 2013-2015 period.

Three tasks have been specified for the Finnish military: defense of the homeland, support of other domestic government agencies in times of crisis, and participation in international peacekeeping operations. Development and procurement of equipment is to be undertaken with all of these potential missions in mind in order to avoid the expense of partial duplication.

Although neither Finland nor Sweden are members of NATO, both joined the Partnership for Peace (PFP) on the same day in May 1994. The history of the PFP is very interesting. It is a NATO program that became operational in January 1994. Apparently, its formation was almost accidental, originally seen as what may be described as a vestibule organization for countries desiring to join NATO, but not yet qualified for membership. The number of countries joining the PFP was surprisingly large, including some that already met NATO standards for membership, but that did not yet desire that formal association for various reasons. This described the traditional neutrals such as Finland, Sweden, Switzerland, and Austria. The PFP has been described as a program “aimed at creating trust between NATO and other states in Europe, and the former Soviet Union” (“Partnership for Peace,” accessed 15 August 2009). As of July 2008, there were 23 member states. Members must indicate a commitment to democratic principles. The goals of the organization are “to increase stability, diminish threats to peace and build strengthened security



relationships between individual Partner countries and NATO, as well as among Partner countries” (www.nato.int/issues/pfp/index.html). Russia’s role in the organization has been questioned by some, particularly since both it and Georgia are members, and, technically, the PFP member states are to refrain from the threat or use of force against other states. Be that as it may, many of the developed neutral states appear to view PFP membership as a form of security protection despite the absence of a security guarantee comparable to NATO’s crucial Article 5, which asserts that an attack on one NATO state will be taken as an attack on all.

Members also commit “to develop the capacity for joint action with NATO in peacekeeping and humanitarian operations” (www.nato.int/issues/pfp/index.html). This has been taken to mean that each partner desiring to participate in such operations has a responsibility to ensure that it has been qualified by whoever is running that operation.

Our respondents stated that their participation in PFP operations had been a valuable experience that provided them with highly useful familiarity with NATO organization and procedures. As a result, the Finns require that anything they buy in the defense area must be NATO interoperable.

Respondents expressed one disappointment with the development of the PFP: the wide disparity in the level of competence and sophistication now found among the members. Many of the earlier partner states with levels of development in military and technical skills comparable to Finland and Sweden have formally joined NATO, leaving a much lower average skill level among the remaining partners. This presents the advanced neutrals with far fewer partner states with which they might exchange useful information on a reciprocal basis.

A point that was emphasized by the respondents was that Finland is the only non-NATO, EU member with a common border with Russia, and yet, it has provided troops for UN, NATO, and EU peacekeeping operations. Finnish troops have also been in Afghanistan from the beginning of operations there, and while the size of



their contingent has not been large, some casualties have been suffered without triggering a drive to withdraw the force.

Finland has a bilateral MOU with Sweden that permits common naval and air control systems and the exchange of situational data. Recently, Finland and Sweden participated together with eight NATO nations in a large air exercise in Sweden designated Operation Loyal Arrow, and Finland led a Nordic air-defense exercise, codenamed ADEX, in 2008. Our respondents were confident that such exercises improve operational standardization and effectiveness.

The discussion then shifted to questions of Nordic cooperation and identity. Above, we noted efforts to encourage knowledge of the Swedish language in Finland. Our respondent humorously noted that steps had to be taken to prevent English from becoming the common Scandinavian tongue.

We were reminded that a long history exists of unsuccessful efforts to establish a Nordic security and economic alliance. Such attempts were made in the early 1930s before the outbreak of WWII, and later in the 1970s. However, an undercurrent of support can still be found for a comprehensive security approach, which might cover more than purely military matters. This feeling partly explains the Finnish decision to join the EU. Our respondent noted that it was hoped in Finland that EU solidarity might have a security component. However, he emphasized that a statement of solidarity was no real substitute for a NATO Article 5 guaranty of mutual support. He also doubted that a common cultural mindset in favor of defense was widespread in the EU.⁶⁴

⁶⁴ A growing debate has arisen over the proper definition of the term “defense,” with some arguing for a broader interpretation that stresses non-military options. For a typical presentation of that position, with a particular emphasis on the Nordic states, see Pernille Rieker (2004). For a skeptical view of soft power as adequate to back up the EU’s diplomatic efforts to engage effective coalitional crisis management, see Adrian Hyde-Price (2008).



Another interesting point raised was that the Nordic area doesn't get much attention paid to it from the rest of the world, especially NATO and the West, because it is viewed as a trouble-free and friendly area. The question resulting from that view is "Why spend time and effort there when they can better be applied to trouble spots elsewhere?"

Our respondent stressed his own inability to understand the persistent difficulties in establishing a Pan-Nordic defense organization, despite the many common features among the Nordic countries. He emphasized common cultures and religion, similar languages, histories, forms of government, architecture—the list could go on, at some length. One other feature that was mentioned was the fact that citizens of the Nordic countries have been able to travel across their countries, passport free, for many years. Movement of goods and people in the Nordic countries was easy because of widespread support for free-trade policies.

In examining the present reality, our respondent stressed the importance of there being a state of trust among the Nordic states. He added, however, that trust wasn't enough; it must be accompanied by concrete, binding agreements. The potential for these agreements has long existed, but it has been difficult to move to a level of execution. He feels that the political will is present and that the respective militaries are not opposed to the idea. To actually move forcefully in that direction will not be easy—such a decision would qualify as a "big thing" with many consequences not easily foreseen. Something would have to happen to force a deliberate decision, with boundary conditions to be met. Such a push could be provided by economic and financial conditions, as well as by a political/military crisis. Inflation in the cost of weapon systems acquisition and support, coupled with a decline in military budgets, might provide a not unrealistic scenario.

Our respondent saw another obstacle to the establishment of a Pan-Nordic defense organization -- public opinion. His perception was that the typical person on the street, while not hostile to some vague concept of Scandinavia, saw him/herself first as a Dane, Finn, Norwegian, or Swede.



He expressed some hope for the future development of NORDSUP, the Nordic Supportive Defense Structures, established in 2008. Its goal is to enhance cost-effectiveness and decrease wasteful overlapping between prior-developed structures such as NORDAC (Nordic Armaments Cooperation), established in 1994, and NORDCAPS (the Nordic Coordinated Arrangement for Military Peace Support), begun in 1997. It will attempt to develop consistent political steering and military coordination in all of these areas of joint effort. Much of this effort grows out of experience gained in participating in peacekeeping operations, but this effort will also be applied to cost-cutting via the identification of areas in which joint efforts in acquisition, maintenance, and training can lead to savings for all participants.

Although NORDSUP began with joint studies conducted by the Chiefs of Staff of Sweden and Norway, it has been expanded and now includes Finland, Denmark, and Iceland. Studies have identified 140 areas of cooperation, and 40 were selected for implementation in 2009. Defense officials have spoken optimistically of the advantages made possible by the program. For example, the Finnish Defense Minister was quoted as follows: “Despite the fact that the Nordic countries have different defense solutions, it has never been an obstacle. [...] We can freely speak on both concrete cooperation projects and on more general political issues. Our defense cooperation has strong political support. Now our target is to speed up the concrete work” (O’Dwyer, 2009, May 18).

The formal joint statement of the ministerial meeting (mentioned above) included rather specific observations on Nordic relations with the rest of Europe. A quote from this statement follows:

The Ministers also discussed security developments in Northern Europe and exchanged views on the ongoing national defence transformation processes. [...] The ministers discussed developments in the High North and possibilities for Nordic cooperation there. Similarly, they analyzed possibilities for enhanced Nordic cooperation in the Baltic Sea. (Ministry of Defence of Finland, 2009)



The earlier-cited *DefenseNews* report included an exchange suggesting that differences on cooperative missions that might be undertaken still exist based on costs and differing alliance associations. Thus, while a proposal to institute a joint surveillance patrol over the North Sea seemed likely to win general Nordic concurrence, a similar suggestion to patrol Icelandic airspace drew some skepticism from the Finnish defense minister, who stressed the high costs involved and complications due to Iceland's membership in NATO (O'Dwyer, May 18 2009).⁶⁵

The inclusion of pilot training under the initial NORDSUP recommendations is not a new idea, and our respondent described an existing multinational effort for joint pilot training in which Finland has played a leading role. In 1997, there were 14 different air forces operating in Europe. At that time, a group of European Air Chiefs established a working group to study the process of pilot training. Also, an unofficial forum was established in which the Chiefs could talk "airman to airman." They focused on commonality and set up a more formal work group consisting of 12 nations. In 2002, this group completed a study, with assistance from the European aerospace industry, on what an integrated training system of pilots would require. The findings were submitted as a staff requirements document to the European Defense Agency, an arm of the EU. NATO countries have their own pilot training program known as the Euro-NATO Joint Jet Pilot Training, or ENJJPT.

Replacement studies for the Finnish F/A-18C/D will begin in several years and will involve examining the competitor aircraft available at that time. The French Rafale is expected to be in production for the next 6 to 10 years, which doesn't give

⁶⁵ Iceland's involvement in NORDSUP may warrant some explanation since it is a country that does not maintain armed forces. Historically, its geographic location was an important strategic spot, and during the Cold War, a US air base was located there. After the demise of the Soviet Union and the end of the Cold War, political factions in Iceland began to press for the removal of that base, and the US acquiesced. After Russian Bear bombers recently began to overfly Iceland, our respondent commented that the Icelanders realized that "the game was not over," and again felt the need for security assistance. The Arctic Sea has become more easily navigable as the ice in this region has melted due to the warming of the seas. This suggests that ocean traffic may grow more important and that a sea route from Europe to Asia may open, which, in turn, will enhance Iceland's strategic position.



it much of a chance. The Eurofighter Typhoon will be available for a somewhat longer period, and the Joint Strike Fighter for quite a long period. It is unclear at this time what version of the Gripen may be available for consideration. Our respondent also felt that the F/A-18E/F Super Hornet would probably also be included in the competition.

A final point on Finland is worth considering. Periodically, the Defense Ministry conducts a survey of public attitudes on the defense budget and on willingness to defend the country in the event of an attack. Those willing to defend the country typically fall in the 80% range, a figure that is considerably higher than the corresponding figure for the other three Nordic states that maintain armed forces.⁶⁶

3. Norway

The major topic at the time of our initial meeting with Norwegian officials was their country's decision to reject the Swedish offer of Gripen and to remain on the US Joint Strike Fighter (JSF) team. In some quarters in Sweden, this was viewed as a blow against the concept of Nordic cooperation, and, hence, much of the Norwegian section of this report deals with their rationale for this decision.

Our Norwegian respondent was firm in his view that the Gripen had been rejected because it did not score well in its tests against the Norwegian criteria for selection. He noted that the evaluation group reported an overwhelming superiority for the JSF in its tests, simulations, and modeling. The Gripen was seen as satisfactory in an environment in which air superiority had already been secured. In all other scenarios, the JSF was deemed far superior. Four different scenarios had been examined: national defense, NATO operations, expeditionary warfare with air superiority, and multinational peacekeeping operations. Our respondent noted that a nation cannot base its future air force on present conditions only. Norway sought

⁶⁶For more on this subject, see Tarja Cronberg (2006).



a multi-role combat aircraft that was capable of a full range of missions.⁶⁷ In his view, “Gripen was not suited to our needs.” In addition, the Norwegian Combat Aircraft Project report came in with the unexpected finding that differences in cost between the two aircraft were significantly less than had been anticipated. Further, the Gripen did not present a stealth quality, and its sensor capabilities were viewed as inferior to those of the JSF.

The Dutch, Danes, and perhaps others have queried the Norwegians as to their reasons for the negative decision on Gripen. Our respondent noted that it was easy to understand the disappointment of the Swedes at the Norwegian decision. He also stated that while official Swedish reaction reflected disappointment, Saab officials were incensed. Saab had much riding on this decision, including whether the company would be able to continue developing combat aircraft since export sales are crucial to their success. Currently, Brazil and India are examining the Gripen C and D versions, but it appears that the Gripen (NG version), a significant improvement over earlier models, will not be produced.

We found the comments on industrial participation in the Gripen-JSF competition highly interesting. Our respondent observed that in circumstances in which the competing aircraft are viewed as essentially equal, considerations of industrial participation may play a major role. Indeed, in this case, the Swedish offer could be viewed as superior. He noted that the Swedes did an excellent job, scouring the Norwegian countryside in search of possible partners and identifying large numbers of relatively smaller firms. The competition possibly energized Lockheed Martin to improve its own offer. The three major partners on the JSF—Lockheed Martin, Northrop Grumman, and BAE—were suspected of holding on to the most attractive work, the technology-intense core activities, while farming out the higher volume, less challenging work to the partners.

⁶⁷ In this connection, it is interesting to recall a statement attributed by a Finnish official to a Swedish source that “a multi-role product usually performs no role well.”



Our respondent reported seeing a clear improvement in the work offered to Norwegian industry over the past year by the JSF leaders. What might have been empty promises have been converted into firm commitments, especially in the area of composites—a field in which the Norwegians have long been highly interested. The major Norwegian firm, Kongsberg, is building a completely new plant to house its composites work.⁶⁸ The Lockheed offer involved a wider range of composite work beyond the JSF project, which suggests a longer-term relationship with major American firms. Further, since the anticipated sales of JSF aircraft over the lifetime of that project far outdistance the potential future sales of the Gripen, the jobs created in Norway are likely to be longer lived.⁶⁹ In addition, a Norwegian firm is now involved with Lockheed in a project to produce Littoral Combat Ships for the US Navy.

Despite the expected gains from JSF offsets, we were assured that they were secondary since, in this case, all elements of the Norwegian government had insisted that because the new aircraft might be expected to play an important role in Norway's defense and security affairs for possibly 40 years, the award should go to the best candidate.

With respect to NORDSUP, the interest in its potential reflected the joint pressures of what seem to be the ever-increasing costs of advanced military equipment and decreasing defense budgets. The Swedish and Norwegian Staff Chiefs were exploring areas for expanding defense cooperation as a possible solution to this problem. Our respondent noted that Norway's center-left government had always given strong support to Pan-Nordic efforts as a way to maintain a relatively full array of military capabilities that it was unable to afford on its own.

⁶⁸ For more on Kongsberg, see the interview with its chief executive in *DefenseNews* (2008, December 15, p. 34).

⁶⁹ It should be noted, however, that much of this work was offered regardless of Norway's decision on the aircraft. This point, obviously, is quite important.



He felt that the NORDSUP effort was poorly handled “from day one” since it did not engage Denmark in the effort originally. The Danes, in his opinion, have always gone their own way, and this mistake could have convinced them to remain outside. However, they and the Finns have now signed on to NORDSUP. While he had no objections to seeking some modest savings from joint purchases of relatively minor items and joint training efforts, he was skeptical as to their total value. In his opinion, if Norway found itself in need of defense assistance, it would make more sense to reach out to its traditional allies such as the Dutch, Danes, the UK, and the US.

He presented another hypothetical example of the limitations of the Pan-Nordic approach. Apparently, the Swedes are considering the possibility of a joint air base with Norway in northern Norway. Its advantages would include common logistics and maintenance and the sharing of other costs. Our respondent then raised the question of likely developments in the event of an attack on the base. In such circumstances, he saw a high probability of a Swedish withdrawal so as not to violate its policy of neutrality. In his opinion, the Swedish promise “not to remain passive” had little operational meaning.⁷⁰

In the view of some observers, an obstacle to complete trust between Norway and Sweden still exists in Norway concerning Sweden’s behavior during WWII when it was technically neutral, but too cooperative with the Germans, who were then occupying both Norway and Denmark. Sweden’s “isolationist” role during the Cold War is another source of distrust.

Despite his expressed skepticism concerning Pan-Nordic feelings as a motivator for decisions, our respondent stressed that different formal security

⁷⁰ A caveat may be appropriate here. Our respondent was a responsible official of the Norwegian Embassy who spoke frankly. He made no claims as to how widely his views may be shared by others. However, he is an experienced and responsible official, and we feel that his opinions are valuable.



arrangements would not have prevented Norway from buying the Gripen, if it had better met Norway's needs. However, Norwegian experience with the F-16 has been "hugely successful," and Norwegian pilots are much closer to the US Air Force than to the Swedish Air Force. Norwegian Air Force leaders also see a higher level of technical expertise in the US than in Sweden. There is a long-standing trust between the two Services that would be hard to duplicate. As he put it, "the US is the ultimate guarantor of Norway's security, not Sweden, so it makes sense to forge closer bonds with your closest ally."

During the interview, a brief discussion followed on the state of domestic politics in Norway, specifically concerning the acquisition of a new fighter aircraft. All parties in the Parliament are now firmly in favor of the Joint Strike Fighter decision, but there has been some criticism of how the Government has handled the matter. However, the Government holds a strong majority, and no party has voted against the decision to proceed with the acquisition of a new fighter aircraft. A recent vote authorized the Government to move forward into negotiations on price and number of aircraft. There appears a strong agreement to acquire the most capable aircraft for Norway's needs, and the likely number is in the 48-50 range.

Despite the Gripen decision, Norway plans to cooperate with Sweden on the acquisition of certain armaments, such as field artillery. They also anticipate a fair amount of cooperation at lower levels in NORDSUP, such as in-training and service activities. The point is that such decisions will be based on quality and usefulness, not on Nordic fellowship.

In Norway, as in other Nordic states, there were mixed views on the usefulness of NATO's Partnership for Peace (PFP) program. There was no doubt in the mind of our respondent that it had aided the attainment of joint operability of military forces from different countries and had familiarized them with NATO standards and procedures. In his opinion, Sweden, through its participation in the PFP, had been brought up to the level at which it was capable of operating jointly with the forces of other countries, permitting it to operate effectively in various UN



peacekeeping operations. On the other hand, he saw the organization as having become too diverse for effective operations. He singled out its failure to distinguish between active and non-active partners, contrasting Sweden and Finland, both of which have supported NATO-related operations all over the world, with, for example, Armenia and the various “Stans,” all of which he felt had done nothing of the sort. In his opinion, the PFP should be reorganized to bring the more capable and like-minded members into a more active role.

On the Pan-Nordic issue, our respondent observed that Denmark was furthest removed from the others and did not appear very interested, although it had finally joined in the NORDSUP effort. He sees it as more transatlantic in orientation, especially under its present national leadership, which has provided some 1,500 troops for the Iraq operation.

4. Sweden

Sweden is the largest country of Scandinavia, as measured both by its geography and population. The high quality of its engineering and industrial design are widely recognized. Its long-standing policy of neutrality, coupled with its largely self-reliance for its own defense, has supported an advanced defense industrial base and an ambitious program in support of defense technology.

During the years of the Cold War and even beyond, Sweden was largely constrained from cooperating with the states of the West by its status of neutrality and non-alignment. Our respondents noted that all this changed in the mid-1990s when Sweden became a PFP participant. This step was described as “a transformative factor” that opened the door for cooperation with countries that were NATO members.⁷¹ A close dialogue had begun with the Finns somewhat earlier,

⁷¹ As it was put by one of our respondents, “The Swedish security policy has changed. The old formulation was something like ‘Sweden is non-aligned in peace striving for neutrality in war.’ This is no longer the case. Sweden is non-aligned but is prepared to assist in conflicts close to Sweden as well as in international operations.”



and both countries joined the PFP in 1994. Our respondent noted, however, that Sweden would never have joined the PFP if membership in the organization had not been open to Russia. In fact, Russia also joined at about the same time as Sweden and Finland. It was noted that each entering member country agrees individually with the PFP organization with regard to the terms of its membership within the broad framework of the goals of the organization.

Early in the interview, one of our respondents introduced as an important point a Declaration of Solidarity that the Defense Commission of Sweden (which contains representatives from the seven parties now in the Parliament) had included in its latest report. The statement reads as follows:

Sweden will not take a passive stance if another EU Member State or other Nordic country suffers a disaster or an attack. We expect these countries to act in the same way if Sweden is affected. This means that Sweden can contribute with military support in crisis and conflict situations. We must be able and willing to help one another in the event of accidents, crisis or conflicts, by contributing with relevant capabilities. In this context, Sweden must be able both to receive and to give military support. (p. 4)

We were told that the new EU Treaty also contains a “solidarity” clause, but our respondents noted that neither it nor Sweden’s “non-passivity” declaration approach NATO’s binding Article 5, which states, in effect, that an attack on one member will be interpreted as an attack on all. It is precisely this difference that skeptics in our other Nordic meetings stressed in their comments.

Our respondents expressed the belief that Nordic cooperation is growing and that it has political support in all of the Nordic Parliaments. They added that the latest government bill on Swedish defense places major emphasis on Nordic cooperation. We were assured that Sweden is not pressing for a Nordic defense treaty or taking responsibility for the defense of others in its region, but that a Nordic “view on security and defense matters” might prove useful. They felt that developments in the NORDSUP organization proved that the Nordic countries can cooperate on defense issues. Then, the highly interesting point emerged that EU



efforts on defense are not seen as substitutes for Nordic efforts because they are more complex and expensive and because the Nordics always have less of a voice in such deliberations than the larger countries.

Thus, to some extent, Nordic cooperation is seen as a possible counter to a small country syndrome in the EU. Such a view was less prominent among the Nordic countries that were NATO members, such as Norway and Denmark, and to some extent, even Finland, which felt it important to be able to depend on their traditional allies, such as the UK and the US. Of course, the small country syndrome is not unknown, even in NATO.

Despite the prominence of the Norwegian decision on Gripen, which occurred during the period of the meetings, our respondents insisted that Norwegian participation in NORDSUP activities was never conditioned on a favorable decision on Gripen acquisition, and they anticipated continuing cooperation with Norway, such as flying joint cross-border reconnaissance missions.

The discussion then turned to the subject of trade in general and to Swedish-US trade in particular. As noted at the beginning of this section, Sweden's efforts to be as self-sufficient as possible present it with some serious difficulties. Advanced military equipment is expensive, and cost control often requires product runs sufficient to bring economies of volume and experience. A nation with limited needs that is attempting to maximize self-sufficiency in equipment for its domestic armed forces must rely upon the development of export markets. Yet, countries that possess a much larger industrial base—and the example of Germany was given—have a huge advantage over Swedish industry. This limits Sweden to aim for niche markets in which its industry may have comparative advantages and/or arrangements with friendly countries that provide beneficial industrial participation and technology transfer.

We were told of a special office in the Swedish embassy that's purpose is to provide assistance to Swedish defense firms attempting to penetrate the US market.



Its activities include helping such firms demonstrate their capabilities to possible US partners or customers and, possibly, navigating around such obstacles as the *Buy American Act* and other restrictive regulations. The office mostly deals with smaller firms since the larger ones usually maintain their own divisions to accomplish such functions.

It was stressed that despite the well-publicized Swedish criticism of the Vietnam War, Sweden remained a reliable supplier of military equipment to the US during that period in fulfillment of its contractual obligations. There is a long history of Swedish-American cooperation during the entire post-WWII period. The following section highlights the most important of such agreements.⁷²

A *Mutual Defense Assistance Act* was signed in 1952, which gave the parties the same rights when acquiring military equipment and services. It was the first of many close bilateral agreements. In 1962, the Swedish Air Force and the US DoD signed a Memorandum of Understanding Concerning Technical Information to facilitate the purchase and development in Sweden of a US engine to be used in the Viggen aircraft. An agreement for information exchange appears in an annex to the MOU. A similar agreement was later reached to provide US components for the engine to be used in the Gripen aircraft. An MOU was reached in 1987 for mutual cooperation in defense procurement. It was followed in 2003 by a Declaration of Principles for further cooperation in Matters of Defense Equipment and Industry. Joint bilateral committees were established to administer these agreements. A number of subsequent agreements were reached for each branch of the armed forces dealing with research and logistics. Finally, in April 2007, an MOU on

⁷² What it doesn't include is reference to a highly secret agreement that provided for US assistance to Sweden in the event of an attack on the latter. See, for example, Robert Dalsjo (2006) and Ann-Sofie Dahl (2008).



Cooperation in Science and Technology for Homeland/Civil Security Matters was signed.⁷³

This long period was not without disagreements. For example, at one point, the US disallowed a proposed sale of Viggen aircraft to India under the terms of US export-control legislation. The aircraft engine was the source of disagreement. Again, in the mid-1980s, a Swedish firm violated an agreement by allowing classified information to be shipped to the USSR. Over the long haul, however, the relationship has been amicable. Our respondent expressed the opinion that without American assistance, today's Swedish Air Force would be far behind its present level of excellence.

Another indicator of US cooperation with Sweden is found in the fact that just over 50% of the parts in the Gripen aircraft are American. The most important of these and their sources follow:

- RM 12 Engine—General Electric Aircraft Engine Division,
- Secondary Power System—Hamilton Sundstrand,
- Air Data Computer—Honeywell, Inc.,
- Wheels and Brakes, and Brake Control System—Aircraft Braking System Corp.,
- Inertial Navigation System—Honeywell, Inc., and
- VOR/ILS System—Rockwell-Collins.

To the extent to which the Swedish parts are similar to others coming off the production lines, Sweden can piggyback, as it were, on a production output much larger than the Swedish order, enabling it to benefit from lower unit costs.

⁷³ These details were taken from a document entitled Background: U.S.-Sweden Defense Cooperation (2009, February 19, p. 3), provided by the Swedish embassy.



Most of the remaining discussion focused on the evolution of the Gripen and the Joint Strike Fighter. The A/B Viggen was introduced in the early 1970s with a primary role of defense of the homeland. In the early plans, the Swedes visualized it as a multi-role combat aircraft, but it soon became evident that limitations in the airframe prevented a single aircraft from performing the desired multiple functions. In due course, improvements in software and in the general level of technology permitted the later Viggen models to approach the desired capabilities. In the interim, different models of Viggen were developed to perform such individual functions as air defense fighter, air-to-ground attack, photo reconnaissance, and sea surveillance. The Gripen became operational in the mid-1990s, but from its inception, it had been designed as an MRCA—with homeland defense as its primary mission. Some shortcomings were discovered in the A/B models, and they had not been designed for interoperability with other aircraft. Gradual improvements were introduced into the Gripen, and it was given the capacity to link with F-16s that were being flown by the Norwegians and Danes. Improvements continued and with better avionics, radars, and weapons, the C/D models were able to handle more demanding tasks. Swedish participation in UN, NATO, and EU peacekeeping missions demanded further advances in interoperability, which were built into later-model C/Ds. In effect, mission change had caught up with the Gripen, and its usefulness in expeditionary warfare had to be added to homeland defense. As it was put by one of our respondents, “Any argument about interoperability was left behind a decade ago.” This is important as Sweden increases its efforts to sell Gripen to some of the new Central and Eastern European members of NATO.

What has not changed is Sweden’s geography and its proximity to a newly aggressive Russia. The Georgian invasion in the summer of 2008 reminded many Nordic policy-makers and citizens of the speed with which old habits can be re-acquired. The significant reduction in Swedish defense budgets over recent years has dramatically reduced the size of its defense establishment. It was noted that 15



to 20 years ago, the Swedish army had numbered approximately 800,000. Currently, the figure is 50,500, or fewer.⁷⁴ Concurrent cuts in the size of the Air Force have brought significant concerns in defense quarters. We were told that the president of Finland has expressed unease about the direction of Sweden's defense budget. The Georgian experience is a reminder that the homeland-defense scenario cannot be forgotten.

With respect to the Norwegian decision to remain on the JSF team, our Swedish respondents largely interpreted it as political in nature. The political and security argument was seen as likely persuasive—that is, based on the importance of remaining with the coalition on an important project. As one of our respondents put it, “It was all politics in the end.” A respondent close to the competition noted that Saab was truly puzzled by the Norwegian rationale for rejecting the offer of Gripen. He indicated that the Norwegians claimed the Gripen was inferior on several criteria the Swedes had never heard about as playing a role in the competition and for which the Swedes had never been asked to provide data. Saab had apparently submitted estimated lifecycle costs for a 30-year period—10 years longer than the length of the originally requested period—as well as other improvements, and they still came up with a cost figure significantly below the cost figure the Norwegians had estimated to be the true lifecycle cost for Gripen. These and other considerations left the Swedes highly suspicious of what the “real” reasons were for the decision. However, they now view the matter as closed and do not intend to pursue the issue further with Norway.

⁷⁴ Quality considerations have to be taken into account in such an environment of quantitative reduction. For an interesting view of Sweden's recent experiences as leader of the Nordic Battle Group of the European Union, see Gerard O'Dwyer (2009, June 8). Participation in the formation of the EU Battle Group has been identified by the Swedish Chief of Defence as a very important factor in transforming the Swedish Armed Forces into a force capable of cooperating with the forces of other countries in pursuit of common missions. See Arita Eriksson (2006, esp. pp. 53-55), Gerard O'Dwyer (2009, October 12), and the interview with General Sverker Goranson, Sweden's new Chief of Defense Staff, in *DefenseNews* (2009, November 2).



Our Swedish respondents' comments on the JSF focused on issues surrounding its reputed capabilities, its costs, and the broad strategic consequences of its potential market success. The most widely touted advantage of the JSF has centered on its stealth qualities. Our respondents considered the stealth feature as "overrated." In their view, "stealth has already had its best day." They were confident that research to counter stealth was now underway in the laboratories of most major powers and that it was just a matter of time before successful countermeasures would become available.⁷⁵ In their view, Gripen would have the sensors to detect a stealthy aircraft within five to ten years.

They also raised the question of the costs associated with the stealth quality. They felt the following questions were important: "What do you actually need and at what cost?" and "What is the threat you are going after with the JSF?" They also asked whether the Danish, Dutch, and Norwegian air forces "are prepared to become squadrons of the US Air Force." They again stressed that the Gripen C/D models were totally interoperable with US aircraft (F15s, F-16s, and F/A-18s) and could communicate with them. They acknowledged that interoperability involved more than technology—questions of organization and operational doctrine were also important; however, they were confident that such issues also could be satisfactorily resolved.

It was emphasized that a squadron of the Swedish Air Force flying Gripen aircraft had recently participated in Operation Red Flag with the US Air Force and had performed successfully at a very high level. Of course, the aircraft were models currently in use in both Services, but all of them are undergoing improvement, with new models on the horizon.

⁷⁵ For what it's worth, the Russian air force procurement chief recently commented that he expects to receive 48 Su-35S fighter aircraft in the 2010-2015 period, which will provide his Service with a near-term counter to the US Air Force's Lockheed Martin F-22 Raptor. See Douglas Barrie and Alexey Komarov (2009). For a semi-technical treatment of counters to stealth technology, see Arend G. Westra (2009).



Our respondents speculated that a change in mission for the JSF had developed—almost by accident—as a result of current developments concerning the F-22 Raptor aircraft in the US Air Force. Questions concerning its costs and role in current scenarios viewed as likely in the near future have led to a cap being placed on further F-22 production. They saw the JSF as originally designed as a relatively simple complement to the F-22 in future air warfare. The F-22 was to serve as a dominator to clear the skies of enemy aircraft, which would then be safe for JSF operations of the air-to-ground variety. In development, the JSF emerged as an aircraft almost as complex as the F-22, with costs becoming ever higher. As a consequence, the question arises as to how smaller countries will be able to afford the JSF, and whether the US Air Force’s plans for its utilization will steer development away from needs the smaller partner countries originally thought they were addressing with its purchase.

Our respondents also saw the JSF wiping out most of the competition in the international marketplace, both from other US firms and their foreign competitors. They saw Lockheed Martin as the sole beneficiary of such dominance. However, an outcome in which the JSF becomes too expensive to risk in combat, but cannot be allowed to fail, brings about a nightmare scenario that has been anticipated by few. This, of course, is an extreme case, and perhaps underestimates the survival capabilities of Boeing’s F/A-18E/F Super Hornet, Saab’s Gripen, and other European-produced aircraft, not to mention the appearance of new competitors from Asia and Brazil.

Our Swedish respondents expect their air force to be flying Gripen aircraft for the next 20 to 40 years, with Saab committed to supporting them and developing improvements over time. Of course, with more users, more funds would become available for Saab to devote to design and development. Another point was emphasized by the Swedes concerning the effects of firm size on production efficiency. They noted that Lockheed Martin is a giant firm compared with Saab, but that doesn’t guarantee that Lockheed will be more capable. It was estimated that



Lockheed employs more lobbyists than Saab employs engineers. A technical breakthrough is possible in either firm, but, in many cases, the smaller organization may have the advantages of flexibility and creativity. Thus, all bets should not, necessarily, be placed on the larger organization.

H. One Tentative Generalization

The situation in Nordic military affairs is indeed complex. It is molded by a rather complex set of motivations among the various countries. On the one hand, common heritage, geography, culture, and interests draw the parts of Northern Europe together. This has resulted in a number of efforts toward a Nordic bloc.

On the other hand, historical experience indicates that the Nordic nations are not necessarily the best of allies. (Whether this reflects little commonality of interest or lack of power is an interesting question.) A related point is that allies outside the Nordic area (especially the United States) are regarded as being more useful in serious situations. How these various considerations will affect future defense policies and international security affiliations among the Nordic nations remains to be seen.



V. Concluding Thoughts

As we observed in our first report in this series (Franck, Lewis & Udis, 2008a), a number of developments have (individually and together) significantly changed the global defense marketplace. What follows is a discussion of these developments.

Two Revolutions in Military Affairs (RMAs) are simultaneously in progress—with one led by the United States and one by Al Qaeda and similar terrorist groups. Both RMAs exploit advances in information technology and are directly opposed to each other in operations that span the globe.

Technical developments have made individual military units dramatically more effective, significantly more expensive, and much more complicated. The effort to develop, manufacture, and support the new systems (such as the Joint Strike Fighter) has severely tasked the capabilities of both large firms and great powers—in both finding the resources and managing the complexities.

Globalization of the defense market has proceeded in parallel with the globalization of economic affairs in general. The long-term trends in international trade have made nations more interdependent. This has had something of a spillover effect on defense industries. Autarky is no longer a tenable strategy for national economies, nor for ministries of defense. This has led to a number of systemic tensions for defense enterprises and defense establishments—the most important being the conflicts between the fact of global interdependence and the imperatives of national sovereignty.

In Section II, we see a confluence of trends with the KC-X Affair. The growth in the size, complexity, and expense associated with new systems, combined with the post-Cold War defense industrial consolidations, mean fewer serious bidders for new projects. When the US Air Force needed a new tanker, it found only one US supplier: Boeing. However, EADS, which offered the KC-30 and had partnered with Northrop Grumman (NG), provided strong competition. Although the NG-EADS



team offered an attractive package that included substantial US industrial participation, Boeing’s political supporters were nonetheless able to appeal to nationalist sentiment against a “foreign” supplier. The results so far resemble a political quagmire. We also think that the “quarrelsome committee” (a dysfunctional example of governmental processes) is now a serious methodological challenger to the “sovereign monopsonist” model.

A main theme of Section III is the interaction of globalization, sovereignty, and complexity. In the case of the A400M, the European participants chose an EU-based defense consortium as a method of reconciling globalization and “sovereignty” (in a regional sense). The geographic and political logic of that consortium led to European engine development, despite an alternative that was much closer to fruition (and with much lower risk) from North America. The result has been very bad for Airbus and its prospective customers—extensive delays and cost overruns. With those adverse developments, A400M buyers have either dropped away, hedged their bets, or become visibly less enthusiastic about pouring still more resources into the project. In fact, chances are pretty good that the A400M project will have been cancelled before this report is published.

The theme of regional partnerships is also pursued in Section IV. Regional partnerships are attractive in principle and should be especially attractive given the many commonalities among the Nordic countries. In practice, however, there are many “devils in the details.” Some of those details surfaced in our interviews with knowledgeable officials from those Nordic countries.

We think this particular report has furthered our agenda of better understanding the nature of the contemporary defense industrial base—in all its global complexities. We also think we’ve surfaced a new mode of analysis (Allison’s Model III) as a candidate vehicle for better understanding the dynamics of contemporary defense industrial affairs.



Appendix 1. Srebrenica Massacre Timeline

Timeline of events leading up to and surrounding the Srebrenica massacre.

Source: Public Broadcasting System

Jan 1993	Muslim guerilla commander Naser Oric more than doubles the size of Muslim territory in eastern Bosnia.
Jan 7, 1993	The Bosnian Muslim forces attack the Serb-controlled village of Kravica and commit atrocities against the local population.
Mar 1993	The Bosnian Serb Army, backed by troops and weapons from neighboring Serbia, reverses all of Oric's gains, and again threatens to take Srebrenica. By now, 60,000 people have flooded into Srebrenica, exhausted, starving, and frightened.
Mar 12, 1993	It seems that salvation arrives. Fearing the total collapse of Srebrenica, French General Philippe Morillon, the UN Commander in Bosnia, bluffs his way through the Serb front line and arrives in the town. Without permission from his superiors, he sees for himself the nightmare in Srebrenica and declares the refugees "under the protection of the UN."
Apr 16, 1993	With the Serbs once again on the verge of taking the town, the UN Security Council passes Resolution 819, declaring that Srebrenica and a 30 square mile area around the town is now the first United Nations Safe Area.
Jan 1995	A Dutch battalion arrives in Srebrenica. As they assemble in their base at Potocari, an old factory just three miles north of the town, they look an impressive force. But for all their impressive appearance, the new Dutch battalion was facing a mountain of problems, as their UN masters were well aware.
Apr 1995	Naser Oric is withdrawn from the enclave by the Muslim leadership, leaving a demoralized and ill-equipped Muslim defense force.
May 1995	The spectacle of 350 Dutch Peacekeepers, held hostage by the Serbs around Sarajevo in response to NATO air strikes, stuns the UN.
May 22, 1995	General Bertrand Janvier, the United Nations Commander in Bosnia, confronts the UN in New York, urging the Security Council either to protect the Safe Area with massive troop increases or to withdraw the vulnerable peacekeepers in order to allow decisive air strikes. He is told to carry on as usual.
June 1995	From April through June, the Serbs tighten their stranglehold, cutting off convoys to the Safe Area.



	July 1995	
July 5, 1995	Shelling erupts in the southern part of Srebrenica.	
July 8, 1995	Serb soldiers take over the Muslim defender's Observation Post Uniform, instruct men and women of Srebrenica to surrender their weapons and leave. In a chaotic moment a Muslim throws a hand grenade at the peacekeepers, resulting in one fatality.	
July 9, 1995	Shelling is constant as refugees flee from the advancing Serbs in the south. The Muslim defenders abandon their final position., while the Serbs advance to half mile from town. The road to Srebrenica is now open. Thirty Dutch peacekeepers are taken hostage by the Serbs.	
July 10, 1995	Col. Karemans (the Dutch Commander) files his third request for air support with the United Nations. The Serbs shell Dutch positions. UN Commander General Janvier rejects the request for Air Support. Serbs are on the hillside over the town center. The Dutch Commander again makes a request for Air Support. General Janvier finally agrees to Air Support. The Serb attacks stop. Colonel Janvier postpones the air strikes until morning. Karremans tells the town leaders that 50 NATO planes will bomb Serbs at 6 a.m. the next morning.	
July 11, 1995	<ul style="list-style-type: none"> ▶▶ 9:00 a.m. Request for close air support was submitted on the wrong form. Dutch told to re-submit the request. ▶▶ 10:30 a.m. The air support request reaches General Janvier. Airborne since 6 a.m., the NATO planes are out of fuel and must return to base in Italy. ▶▶ 11:00 a.m. General Janvier is unsure of Serb intentions and again hesitates over approving air support. More than 20,000 refugees - women, children, sick and elderly - flee for the main Dutch base at Potocari, three miles away. ▶▶ 12:05 p.m. General Janvier authorizes air support, four hours after the request is submitted. ▶▶ 2:40 p.m. Two Dutch F-16 Fighters drop two bombs on Serb positions. The Serbs threaten to kill Dutch hostages and shell refugees. Further strikes are abandoned. ▶▶ 4:15 p.m. General Ratko Mladic enters Srebrenica to claim the town for the Bosnian Serbs. He is accompanied by Serb camera crews. 5,000 refugees shelter inside the Dutch base. More than 20,000 people seek refuge in nearby factories and fields. ▶▶ 4:45 p.m. Serb soldiers arrive at Potocari. 	



	<p>▶▶ 8:30 p.m. Mladic summons Colonel Karremans to a meeting. Colonel Karremans asks for food and medicine. General Mladic delivers an ultimatum: the Muslims must hand over their weapons to guarantee their lives.</p> <p>▶▶ Midnight The remaining weapons are carried away by Muslim defenders, who lead 15,000 men on a perilous 40 mile journey through mountains and minefields toward Muslim territory. Mladic and General Krstic meet a delegation of Srebrenicans. Mladic again demands that weapons must be surrendered. He says: "Allah can't help you but Mladic can."</p>
July 12, 1995	<p>Buses arrive to take women and children to Muslim territory, while the Serbs begin separating out all men from age 12 to 77. The Serbs insist that men must be questioned to identify Muslim War Criminals. 5:00 p.m. The buses are too frequent for the Dutch to monitor. Twenty-three thousand women and children will be deported in the next 30 hours. Hundreds of men are held in trucks and warehouses. The Serbs shell men attempting to flee through the mountains. Hundreds are killed, while thousands wander the hills.</p>
July 13, 1995	<p>Hundreds of men are captured as they try to flee through the mountains.</p> <p>10:00 a.m. 400 men are held in a Bratunac warehouse.</p> <p>Noon. Dutch peacekeepers begin to carry out Serb demands to expel 5,000 refugees from their base. Many of these people will be killed by the Serb Army.</p> <p>4 p.m.-midnight Hundreds of exhausted men are captured trying to flee through the mountains. In a nearby warehouse in Kravica Village, hundreds of prisoners are gunned down. More than 1,000 men are killed in and around Srebrenica. Lt. Vincent Egbers and 13 peacekeepers leave the Serb base at Nova Kasaba after being held for 24 hours.</p>
July 16, 1995	<p>After five days of fleeing through the mountains from Serb attacks, the first refugees arrive in Muslim territory.</p> <p>Following negotiations between the UN and the Bosnian Serbs, the Dutch are permitted to leave Srebrenica. Weapons, food and medical supplies are left behind.</p> <p>First reports of the massacre now emerge. The head of the UN Mission in Bosnia, Yasushi Akashi, fails to report evidence of atrocities.</p> <p>Colonel Karremans calls the attack on Srebrenica "an excellently planned military operation." He makes no mention of the atrocities. In the mountains around Srebrenica, the killing goes on for weeks. Between July 12 and July 16, 1995, the Bosnian Serb Army kills over 7,000 Muslim men.</p>



THIS PAGE INTENTIONALLY LEFT BLANK



List of References

- Aerospace Industries Association (AIA). (1973). *Monopsony: a fundamental Problem in Government Procurement*, Washington, DC: Aerospace Research Center, May.
- Agence France Presse (AFP). (2010, January 5). *Airbus set to ditch A400M transport plane: report*. Retrieved January 9, 2010, from <http://www.google.com/hostednews/afp/article/ALeqM5g-JYDMxcRjkPV1NZ34BcemUNWvGw>
- AIM GmbH. (2010). *Company overview*. Retrieved January 11, 2010, from <http://www.aim-online.com>
- Air Force Magazine (2009), Let's Work It Out, 29 October, <http://www.airforce-magazine.com/Features/modernization/Pages/box102909northrop.aspx>
- .Alenia Aeronautica. (2009, May 28). *Alenia Aeronautica completes the deliveries of the C-27Js to the Italian Air Force with the 12th aircraft delivered*. News release. Retrieved June 3, 2009, from <http://www.aeronautica.alenia.it>
- Allison, G.T. (1971). *Essence of decision: Explaining the Cuban missile crisis*. Boston: Little, Brown.
- Allison, G.T., & Zelikow, P. (1999). *Essence of decision: Explaining the Cuban missile crisis* (2nd ed.). New York: Longman.
- Barrie, D. (2009, May 11). 'Difficult negotiations' for U.K. government and Airbus. *Aviation Week & Space Technology*. Retrieved May 12, 2009, from <http://aviationweek.com>
- Barrie, D., & Komarov, A. (2009, August 24-31). Bullish bear: Russia dares to dream of advanced airpower assets, with confidence bolstered by near-term fighter purchase. *Aviation Week*, 31-32.
- Bitzinger, R. (2000, November). *Problems and prospects facing second-tier arms-producing states in the post-Cold War era: A comparative assessment*. New York: Council on Foreign Relations.
- Borak, Donna (2009) Boeing backers press Obama on \$35B tanker contract, Associated Press, 2 November, <http://www.google.com/hostednews/ap/article/ALeqM5hOCVt5RRcS7IEfTMLYUzKcXQyfBQD9BNK9PO0>.



- Brothers, C. (2009, May 13). Earnings drop 40% for European plane maker. *The New York Times on the Web*. Retrieved May 13, 2009, from <http://nytimes.com>
- Brzoska, M. (2006). The Nordic attitude to and role in EU-linked defence industrial collaboration. In A.J.K. Bailes, G. Herolf & B. Sundelius (Eds.), *The Nordic countries and the European security and defence policy* (pp. 185-192). London: Oxford University Press, for the Stockholm International Peace Research Institute.
- Burger, L. (2010, January 5). EADS preparing to quit A400M project – paper. *Reuters*. Retrieved January 11, 2010, from <http://www.reuters.com/article/idUSLDE60405S20100105?type=marketsNews>
- Cahlink, George (2004) Ex-Pentagon procurement executive gets jail time, *Government Executive*, 1 October, <http://www.govexec.com/dailyfed/1004/100104g1.htm>.
- Chuter, A. (2009, May 7). A400M delayed by paperwork blunder. *Defense News*. Retrieved May 12, 2009, from <http://defensenews.com>
- Chuter, A. (2009, May 11). Airbus seeks to cut A400M capabilities. *Defense News*. Retrieved May 12, 2009, from <http://www.defensenews.com>
- Ciano, Galeazzo (1946), *The Ciano Diaries, 1939-1943*, Hugh Gibson (ed.), New York: Doubleday.
- Defense Commission of Sweden. (DATE). *Declaration of solidarity*.
- de Vaucorbeil, S. (2008, November). The changing transatlantic defence market. In D. Keohane (Ed.), *Towards a European defence market* (Chaillot Paper 113). Brussels: European Union Institute for Security Studies.
- DiMascio, Jen (2009) For tanker contract, 3rd time charm?, *Politico*, 7 June, <http://www.politico.com/news/stories/0609/23393.html>.
- Dorfer, I. (1997). *The Nordic nations and the new western security regime*. Washington, DC: Woodrow Wilson Center Press.
- Drew, Christopher (2009). Bid Process for Air Force Tanker Is Criticized, *New York Times*, 27 October, http://www.nytimes.com/2009/10/27/business/27tanker.html?_r=1
- Eriksson, A. (2006). The building of a military capability in the European Union: Some internal and external implications. In J. Hallenberg & H. Karlsson (Eds.), *Changing security relations: Do the U.S., EU and Russia form a new strategic triangle?* (pp. 44-62). New York: Routledge.



- Evans-Pritchard, A. (2009, March 30). Airbus admits it may scrap A400M military transport aircraft project. *The Daily Telegraph* (London). Retrieved April 27, 2009, from LexisNexis Academic.
- Felstead, P. (2009, May 19). French industry buoyant over Rafale export prospects. *Jane's Defense Week*. Retrieved May 26, 2009, from <http://janes.com>
- Flottau, J. (2009, January 26). Weight-watching. *Aviation Week & Space Technology*, 170(8). Retrieved April 27, 2009, from LexisNexis Academic.
- Franck, Raymond, Ira Lewis and Bernard Udis (2008a), Echoes across the Pond: Understanding EU-US Defense Industrial Relationships, Monterey, CA: Naval Postgraduate School, NPS-AM-08-002, 29 January (rev 20 May)
- Franck, Raymond, Ira Lewis and Bernard Udis (2008b), New Patterns of Collaboration and Rivalry in the US and European Defense and Aerospace Industries, Monterey, CA: Naval Postgraduate School, NPS-AM-08-131, 30 September.
- Frey, S. (2009). Collaboration: The way ahead for European land system producers? *Military Power Revue der Schweizer Armee*, (1), 28-39.
- Government Accountability Office (2008a), GAO Sustains Boeing Protest, Press Released, 18 June, http://www.gao.gov/press/press-boeing2008jun18_3.pdf.
- Government Accountability Office (2008b), Decision in the Matter of The Boeing Company, 18 June, available at <http://www.gao.gov/decisions/bidpro/311344.pdf>.
- Gates, R. (1996). *From the shadows: The ultimate insider's story of five presidents and how they won the Cold War*. New York: Simon & Schuster.
- Gertler, Jeremiah (2009) Air Force KC-X Tanker Aircraft Program: Background and Issues for Congress, Washington, DC: Congressional Research Service, December 7.
- Gnau, Thomas (2009), AF chief of staff: Government and industry must work together Dayton Daily News, 21 April, <http://www.daytondailynews.com/business/af-chief-of-staff-government-and-industry-must-work-together-89632.html>
- Goldman, Julianna (2009), Obama Promises to Veto Unnecessary Defense Spending (Update1), Bloomberg.com, 17 August, available at <http://www.bloomberg.com/apps/news?pid=20601103&sid=ai2a6raalZ6g>
- Graubard, S.R. (1984). Preface. *Daedalus, Journal of the American Academy of Arts and Sciences*, 113(1, *The Nordic Enigma*), #-#.



- Gribben, R. (2009, March 11). EADS woes mount as A400M hits turbulence. *The Daily Telegraph* (London), 5. Retrieved April 27, 2009, from LexisNexis Academic.
- Hagelin, B. (2006). Hardware politics, 'hard politics' or 'where, politics?': Nordic defense equipment cooperation security and defence policy in the EU context. In A.J.K. Bailes, G. Herolf & B. Sundelius (Eds.), *The Nordic countries and the European security and defence policy* (pp. 167-184). London: Oxford University Press, for the Stockholm International Peace Research Institute.
- Hale, J. (2009, May 25). Paris, Berlin seek partners to develop transport helo. *Defense News*. Retrieved May 29, 2009, from <http://www.defensenews.com>
- Hollinger, P., Clark, P., & Lerner, J. (2010, January 5). Airbus threatens to scrap A400M aircraft. *Financial Times* (London). Retrieved January 11, 2010, from <http://www.ft.com/cms/s/0/dfb12870-f9f1-11de-adb4-00144feab49a.html>
- Hoyle, C. (2009, December 11). Airbus A400M takes to the sky! *Flightglobal/Blogs*. Retrieved January 11, 2010, from <http://www.flightglobal.com>
- Hyde-Price, A. (2008). A neurotic centaur: The limitations of the EU as a strategic actor. In K. Engelbrekt & J. Hallenberg (Eds.), *The European Union and strategy: An emerging actor* (pp. 153-166). New York: Routledge.
- Jane's. (2008, February 6). *Jane's aero-engines: General Electric CF6*. Retrieved June 3, 2009, from <http://www.janes.com>
- Jane's. (2008, July 16). *Jane's aero-engines: EUROPROP-EPI Europrop International GmbH*. Retrieved June 3, 2009, from <http://www.janes.com>
- Jane's. (2008, December 23). *Jane's all the world's aircraft: Airbus military A400M*. Retrieved April 27, 2009, from <http://www.janes.com>
- Jane's. (2009, January 27). *Jane's aero-engines: Europrop TP400-D6*. Retrieved April 28, 2009, from <http://www.janes.com>
- Jane's. (2009, May 13). *Jane's all the world's aircraft: Boeing C-17A Globemaster III*. Retrieved June 1, 2009, from <http://www.janes.com>
- Klinge, M. (1984). Aspects of the Nordic self. *Daedalus, Journal of the American Academy of Arts and Sciences*, 113(2, Nordic Voices), 257-277.
- Knight, William et. al. (2008). *Air Force refueling: The KC-X aircraft acquisition program*. Washington, DC: Congressional Research Service.



Lambert, S. (2009). European Aeronautic Defence and Space Company EADS N.V. *Hoovers*. Retrieved May 11, 2009, from ProQuest.

Martí Sempere, C. (2008, March). *La industria y la tecnología en la política europea de seguridad y defensa* [Industry and technology in European defense and security policy] (Monografías del CESEDEN, 105). Madrid: Centro Superior de Estudios de la Defensa Nacional. Retrieved April 27, 2009, from <http://www.ceseden.es>

Masseret, J.P., & Gautier, J. (2009, February 10). *Rapport d'information fait au nom de la commission des Finances, du contrôle budgétaire et des comptes économiques de la Nation et de la commission des Affaires étrangères, de la défense et des forces armées sur les conditions financières et industrielles de la mise en œuvre du programme A400M* [Information report regarding the financial and industrial status of the implementation of the A400M program made on behalf of the committee on finances, budgetary control and national accounts, and the committee on foreign affairs, defense and armed forces] (Sénat [France], session ordinaire de 2008-2009 , N° 205). Retrieved April 27, 2009, from <http://www.senat.fr>

McFate, P.B. (1984). To see everything in another light. *Daedalus, Journal of the American Academy of Arts and Sciences*, 113(1, *Nordic Enigma*), 29-59.

Mead, W.R. (1984). Norden: Destiny and fortune. *Daedalus, Journal of the American Academy of Arts and Sciences*, 113(1, *Nordic Enigma*), 1-27.

Military History of Finland., *Wikipedia*. Retrieved August 9, 2009, from http://en.wikipedia.org/wiki/Military_History_of_Finland..

Ministry of Defence of Finland. (2009, May 13). *Nordic defence ministerial in Kotka—joint statement*.

Morgan, David (2009) France eyes 14 interoperable aerial tankers, Reuters, 29 April, <http://www.reuters.com/article/rbssAerospaceDefense/idUSN2943545620090429>

Neuman, S. (2006). *Defense industries and dependency: Current and future trends in the defense sector*. Zurich: Swiss Federal Institute of Technology, International Relations and Security Sector.

Nordic Council. *Wikipedia*. Retrieved 15 December 2009, from http://wikipedia.org/wiki/nordic_council.



- O'Dwyer, G. (2009, May 18). Nordic meeting shows progress—and limits—of defense cooperation. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, June 8). Nordic battle group dividends. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, June 29). Progress emerges on Nordic joint projects: Finn defense chief says next 2 years will show evidence. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, July 13). Baltics maintain cooperative funding. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, August 3). Russia warns Denmark over Arctic arms race. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, September 7). Neutral Nordic nations court NATO. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, September 21). Swedish firms shift to exports as government opts for off-the-shelf. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, September 28). Danish report: Conflicts coming over Arctic. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, October 5). Finland, Estonia join forces on defense modernization. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, October 12). Sweden pushes to revamp EU battle groups. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, November 2). Danish fighter decision delayed again. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer, G. (2009, November 16). Nordic defense cooperation moves forward. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- O'Dwyer's, G. (2009, December 7). Nordic Council urges focus on common defense. *DefenseNews*. Retrieved DATE, from <http://www.defensenews.com>
- Partnership for Peace. .*Wikipedia*. Retrieved 15 August 2009,, from http://wikipedia.org/wiki/Partnership_for_Peace.



- Pearson, D. (2009, December 11). A400M makes first flight. *WSJ.com*. Retrieved January 11, 2010, from <http://online.wsj.com>
- Public Broadcasting System (PBS). (2010). *Timeline of events leading up to and surrounding the Srebrenica massacre*. Retrieved January 8, 2010, from <http://www.pbs.org/wnet/cryfromthegrave/about/intro.html>
- Raghuvanshi, V. (2009, May 25). Dassault struggles to stay in India's fighter jet race. *Defense News*. Retrieved May 29, 2009, from <http://www.defensenews.com>
- Rasmussen, M.V., & Breitenbauch, H.O. (2007, October). *Denmark's need for fighter aircraft: A strategic analysis of the future need for Danish fighter aircraft*. Copenhagen: Dansk Institut for Militaere Studier.
- Reed, John (2009) Sessions: Northrop Threat Has Congress Uncertain, *DefenseNews*, 15 December, <http://www.defensenews.com/story.php?i=4421294&c=AME>
- Rieker, P. (2004). Europeanization of Nordic security: The European Union and the changing security identities of the Nordic states. *Cooperation and Conflict*, 39, 369-392.
- Rolls-Royce. (2010). *Rolls-Royce North America: History*. Retrieved January 9, 2010, from <http://www.rolls-royce.com/northamerica/history/default.htm>
- Rothman, Andrea and Jonathan Stearns (2009), Airbus A350 Loans Unrelated to WTO Ruling, EU Says, *Bloomberg*, 28 August, <http://www.bloomberg.com/apps/news?pid=20601085&sid=20uNUr6i4>
- Shalal-Esa, A. (2008, August 6). Pentagon revives tanker contest. *Reuters*. http://biz.yahoo.com/rb/080806/usa_tanker.html
- Shalal-Esa, Andrea (2009, 19 April) Congress may split tanker award despite Gates' "no", <http://www.reuters.com/article/politicsNews/idUSTRE53I2CZ20090419>.
- Shalal-Esa, Andrea (2009, 8 September) House, Senate resume work on 2010 Pentagon budget, *Reuters*, <http://www.reuters.com/article/politicsNews/idUSTRE5876RS20090908>
- Shalal-Esa, Andrea (2009, 23 October) Boeing refused to release tanker pricing – Pentagon, *Reuters*, <http://www.reuters.com/article/rbssIndustryMaterialsUtilitiesNews/idUSN224762020091023>



- Shalal-Esa, Andrea, Reuters, 1 December 2009, UPDATE 2-Northrop threatens to boycott US tanker contest, Reuters, <http://www.reuters.com/article/AIRDEF/idUSN0151336920091201>
- Shalal-Esa, Andrea and Tim Hopher, Air Force: No major tanker term changes, Reuters, 14 December 2009, <http://www.reuters.com/article/idUSTRE5BD50U20091215>
- Shalal-Esa, Andrea (2009, 17 December), Pentagon signals minor changes to tanker rules, Reuters, <http://www.reuters.com/article/idUSTRE5BG5QA20091217?type=politicsNews>.
- SIPRI (2008), SIPRI Top 100 Defense Producers, published in Chapter 6 of *SIPRI Yearbook*, 2008, and available at http://www.sipri.org/research/armaments/production/resultoutput/arms_producers/companies.
- Smith, R. Jeffrey (2005) Roche Cited for 2 Ethics Violations. Washington Post, A21, <http://www.washingtonpost.com/ac2/wp-dyn/A12344-2005Feb9?language=printer>, 10 February.
- Sparaco, Pierre (2010) Disappointing Tankers, *Aviation Week*, 4 January, p. 51.
- Stoltenberg, T. (2009, February 9). "Proposals Presented to the Extraordinary Meeting of Nordic Foreign Ministers in Oslo on 9 February 2009." *Nordic Cooperation on Foreign and Security Policy*. .
- Sweden. *MSN Encarta*. Retrieved August 9, 2009, from http://msn.com/text.4563138_sweden.html
- Taverna, M.A., & Barrie, D. (2009, March 23). Flight idle. *Aviation Week & Space Technology*. Retrieved June 4, 2009, from <http://aviationweek.com>
- Tiron, Roxana (2009, 1 December) Northrop threatens to pull out of tanker battle, The Hill.Com, available at <http://thehill.com//homenews/administration/70105-northrop-threatening-to-pull-out-of-air-tanker-battle>.
- Tiron, Roxana (2009, 2 December) Rep. Murtha: Possible Northrop withdrawal 'blow' to tanker deal, The Hill.Com, available at <http://thehill.com/news-by-subject/defense-homeland-security/70243-murtha-northrop-withdrawal-qblowq-to-air-force-tanker-program>
- UK House of Commons Defence Committee. (2009, February 26). *Defence equipment 2009: Third report*. (HC 107, Session 2008-2009). Retrieved April 27, 2009, from <http://www.parliament.uk>



- UK Ministry of Defence. (2005, December). *Defence industrial strategy: Defence white paper* (Cm 6697). Retrieved April 28, 2009, from <http://www.mod.uk>
- UK National Audit Office. (2008, December 15). *Ministry of Defence: Major projects report 2008* (HC 64-I, Session 2008-2009). Retrieved April 27, 2009, from <http://www.nao.org.uk>
- UK Royal Air Force. (2009). *Tanker and transport aircraft*. Retrieved April 28, 2009, from <http://www.raf.mod.uk/equipment/tankerandtransport.cfm>
- US Air Force Biography (2001) Darleen A. Druyun
http://web.archive.org/web/20021221215107/http://www.af.mil/news/biographies/druyun_da.html, October.
- US Air Force Biography (2004), Dr. James G. Roche,
http://www.af.mil/information/bios/bio_print.asp?bioID=6942&page=1, last updated February.
- U. S. Air Force, Department of (2009), Synopsis: Draft Request for Proposal for the KC-X Tanker Modernization Program, Solicitation Number: FA8625-10-R-6600, 25 September
https://www.fbo.gov/index?s=opportunity&mode=form&id=713bc6e87f1a76db2c2b20a4bee1e8a5&tab=core&_cview=0
- US Coast Guard. (2009). *HC-144A "Ocean Sentry" maritime patrol aircraft*. Retrieved June 4, 2009, from <http://www.uscg.mil/ACQUISITION/mrs/projectdescription.asp>
- US Department of Defense (DoD). (2010). *Dr. Robert M. Gates: Secretary of Defense*. Retrieved January 8, 2010, from <http://www.defense.gov>
- Wall, R. (2009, April 16). Airbus integrates military aircraft unit. *Aerospace Daily & Defense Report*. Retrieved June 5, 2009, from LexisNexis Academic.
- Wall, R. (2009, May 11). A400M contractual revisions expected by year-end. *Aviation Week & Space Technology*. Retrieved June 5, 2009, from <http://aviationweek.com>
- Wall, R. (2010, January 8). *A400M: Flight trials in 2010 begin*. Retrieved January 11, 2010, from <http://www.aviationweek.com>
- Wall, R., & Barrie, D. (2009, December 11). A400M completes first flight. *Aviation Week & Space Technology*. Retrieved January 11, 2010, from <http://aviationweek.com>
- Wall, R., & Taverna, M.A. (2009, February 23). Flat forecast. *Aviation Week & Space Technology*. Retrieved June 5, 2009, from <http://aviationweek.com>



Walt, S.M. (1997). Why alliances endure or collapse. *Survival, Spring*, 156-179.

Westra, A.G. (2009). Radar versus stealth: Passive radar and the future of U.S. military power. *Joint Forces Quarterly*, 55(4), 136-143.

Wolf, Jim (2009), EADS says not fooling about tanker boycott threat, Yahoo News, 11 December,
http://news.yahoo.com/s/nm/20091211/bs_nm/us_tanker_usa_eads



2003 – 2010 Sponsored Research Topics

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting



Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-tem Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition
- Lean Six Sigma to Reduce Costs and Improve Readiness



- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

A complete listing and electronic copies of published research are available on our website: www.acquisitionresearch.org



ACQUISITION RESEARCH PROGRAM
 GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
 NAVAL POSTGRADUATE SCHOOL

THIS PAGE INTENTIONALLY LEFT BLANK



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL



ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL
555 DYER ROAD, INGERSOLL HALL
MONTEREY, CALIFORNIA 93943

www.acquisitionresearch.org