

CATALYZING CHANGE IN COMPLEX ORGANIZATIONS:
THE DEPARTMENT OF DEFENSE OFFICE OF FORCE TRANSFORMATION

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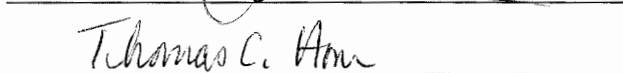
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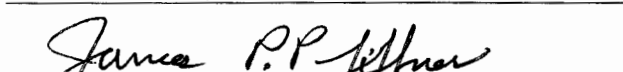
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DEDICATION

This work is dedicated to my family, especially my wife Helena Antonia.

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I would like to thank those who provided assistance throughout the conduct of research and preparation of this dissertation. First, thank you to the Institute for Defense Analyses (IDA) for its financial support over the years and the flexibility it afforded me to pursue the PhD while also working full-time. In particular, I would like to thank my division directors, Mr. Michael Leonard and Mr. Michael Dominguez, who were both very supportive of the research. Also, at IDA, I want to thank Mr. Andrew Hull and Dr. Richard White who are close colleagues and provided inspiration during this journey. In addition, I would like to thank Mr. Robert Holzer and Ms. Paula Trimble, both of whom offered invaluable amounts of data in the form of official memoranda, unpublished materials, and program background. Many others provided data in the form of interviews and, in particular, Mr. John Garstka was generous with his time, agreeing to several interview sessions. Finally, I wish to thank all the members of my committee, Drs. James Pfiffner and David Armor of George Mason University's School of Public Policy, Dr. Andrew Loerch of the Systems Engineering and Operations Research Department of George Mason University, and the external reader, Dr. Thomas Hone, for his especially thoughtful comments. In particular, I would like to thank Dr. Pfiffner, serving as chair of the committee, for his guidance, patience, and insightful feedback throughout the process.

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ABSTRACT

CATALYZING CHANGE IN COMPLEX ORGANIZATIONS: THE DEPARTMENT OF DEFENSE OFFICE OF FORCE TRANSFORMATION

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In 2001, the Department of Defense launched an effort to *transform*, or radically change, the U.S. military to remain ahead of would-be adversaries and fully execute the 2002 *National Security Strategy*. Its primary vehicle for doing so was the establishment of an independent office, the Office of Force Transformation (OFT), charged with catalyzing change, in coordination with other major actors throughout the department. The office existed from 2001 until 2006, at which point it was closed for a variety of reasons and under mixed reviews. Although both military history and organizational theory provide some insights into the experience, neither provide analogous cases involving a small, independent office responsible for promoting change within an organization as large and complex as the Department of Defense. Therefore, prompted by the department's recent experience with OFT, the research presented here considers whether the office was successful at advancing its key initiatives. In doing so, it seeks to address the bureaucratic prerequisites to successfully promoting a change agenda and

also to provide recommendations for the department or other agencies interested in pursuing similar agendas in the future.

This dissertation reviews leading scholarly and policy research regarding military change, organizational theory, and defense resource management. Building on this review, it presents an evaluative framework and a series of key dimensions intended to address the primary research question and related policy questions. It then applies the framework to three leading OFT initiatives—Operationally Responsive Space, Project Stiletto, and Education for Transformation—and broadly to the office’s portfolio. These cases are based on primary research, including twenty interviews with key participants serving both inside and outside of the office during the timeframe studied.

The evaluation of these cases provides ample evidence suggesting that OFT was successful in advancing its leading initiatives. The research yielded findings that both confirm and elaborate upon existing scholarly research on topics such as the role of leadership, bureaucratic resistance, and the necessity of resources in motivating change. Key policy recommendations include emphasizing the role of senior leadership in providing vision and direction, the need for a balanced strategy demonstrating immediate results, and giving the change agent a formal role in decision-making processes.

CHAPTER ONE: INTRODUCTION

The unparalleled strength of the United States armed forces, and their forward presence, have maintained the peace in some of the world's most strategically vital regions. However, the threats and enemies we must confront have changed, and so must our forces. A military structured to deter massive Cold War-era armies must be transformed to focus more on how an adversary might fight rather than where and when a war might occur.¹

George W. Bush, 2002
National Security Strategy of the United States of America

In recent decades, several U.S. Presidents have expressed the need to reform the military but none as strongly as President George W. Bush. President G.W. Bush and his first Secretary of Defense Donald Rumsfeld repeatedly called for sweeping military *transformation* to better address current and future challenges to U.S. national security. Indeed, even 2002 *National Security Strategy of the United States of America* (NSS) during the George W. Bush administration was predicated upon greater U.S. influence through more robust military capabilities that would result from transformation. Given that some have argued that 2002 NSS was the “most important reformulation of U.S. grand strategy in over half a century,” understanding the strategy’s central tenet of military transformation is important to explaining defense policy during the

¹ *The National Security Strategy of the United States of America* (Washington, D.C.: The White House, 2002), 29.

administration.² Furthermore, understanding transformation and how it was pursued can inform future military reform initiatives by determining what factors contributed to its success or failure.

Accomplishing the degree of change necessary to transform the military requires active participation of much of the Department of Defense (DoD) and its components. Secretary Rumsfeld recognized the need for a catalyst for change—an organization responsible for orchestrating the various parts of the change agenda. To accomplish this, Rumsfeld established the DoD Office of Force Transformation (OFT) in November 2001. The department’s 2001 *Quadrennial Defense Review* directed that, “To support the transformation effort, and to foster innovation and experimentation, the department will establish a new office reporting directly to the Secretary and the Deputy Secretary of Defense.”³ Thus the office was established and operated for several years as, according to some, the department’s primary “spearhead” for advancing transformation.⁴ The office was seen as the primary “champion” of transformation and the department’s “organizational loci” for achieving the President’s vision of military change.⁵ Then, in

² John Lewis Gaddis, “A Grand Strategy,” *Foreign Policy* (November/December 2002): 56. Transformation (of the military and other national security institutions) is mentioned fifteen times throughout *The National Security Strategy of the United States of America*.

³ *Quadrennial Defense Review Report* (Washington, D.C.: Department of Defense, 2001), 29.

⁴ Steven E. Else, “Organization Theory and the Transformation of Large, Complex Organizations: Donald H. Rumsfeld and the U.S. Department of Defense, 2001-2004” (PhD Dissertation, University of Denver, 2004): 15–16.

⁵ Theo Farrell, Sten Rynning, and Terry Terriff, *Transforming Military Power Since the End of the Cold War: Britain, France, and the United States, 1991–2012*, unpublished draft, forthcoming, 2013, 93.

October 2006, the office was dissolved and folded into other parts of the Office of Secretary of Defense.⁶

A. Research Objective

Given OFT's primacy in promoting military transformation—a concept already identified as critical to the new *National Security Strategy*—it is important for future change agendas in DoD and throughout the Federal government to understand the strengths and limitations of the Office of Force Transformation. The objective of this research is to identify such strengths and limitations to design more effective change (or transformation) agendas in future administrations. It will do so by asking *whether the Department of Defense Office of Force Transformation was successful at advancing key transformation initiatives*. Addressing this will reveal important lessons from which future change agendas may learn. To answer the question and to explore other elements important to affecting change, the following issues are also addressed:

1. What were the Office of Force Transformation's key initiatives? Lesser initiatives?
2. Would these initiatives have been advanced had OFT not pursued them?
3. Did the political and bureaucratic prerequisites exist for the office to successfully affect change in the larger Department of Defense?
4. What lessons from OFT are generalizable to affecting change in other complex organizations?

⁶ Jen DiMascio, "Transformation Office Realignment Makes Change Part of Pentagon Mainstream," *Defense Daily*, February 27, 2007. Available at <http://www.highbeam.com/doc/1G1-161034936.html>, last accessed August 2012.

This research offers a number of findings that could benefit the Department of Defense and other parts of the Federal government interested in implementing change agendas. Many of the findings pertain directly to DoD, given it was the focus of the case study. However, selected findings are generalizable to other parts of the Federal government. Some of the major findings from this research are outlined below (and described in greater detail in subsequent chapters):

1. *Strong leadership of change agency offers both advantages and disadvantages.*

The literature on organizational change points to the importance of strong leaders in motivating change throughout an organization. The case of OFT was no different in that its director, retired Admiral Arthur K. Cebrowski, served to raise the profile of the office and the transformation agenda because he was well-known and respected throughout the national security community. However, this strong leadership was not without drawbacks. The first was that several former OFT staff indicated that it engendered a “cult of personality” within the office that caused a certain level of dysfunction. Many of them indicated associated behaviors were counterproductive and unlike other organizations where they had served with important and influential leaders. Another drawback of the strong leadership OFT enjoyed was the challenge it presented when it was time to replace its director. So much of what the office had become was associated with the standing and accomplishments of its director and DoD senior leadership was reluctant to replace him and consequently did not, choosing to close the office instead.

2. *Failure to obtain sufficient attention from departmental leadership hampers pursuit of change agendas.* A change agent requires some amount of time and attention from the department's senior leadership, ideally the Secretary, to advance its agenda. In the case of OFT, Secretary Rumsfeld did not afford the office much of either, nor did his senior leadership team. A majority of those interviewed believed that this lack of attention seriously hampered the ability of OFT to achieve its full potential. This is because the office derived its authority from access to the Secretary, of which it had virtually none. Furthermore, it was not only OFT that received scarce attention from Rumsfeld, but the broader transformation agenda as well.
3. *Developing partnerships is essential to advancing a change agenda.* As evidenced throughout this study, organizational partnerships were important to OFT's success in advancing its initiatives. They permitted the office to overcome some of the resistance which existed and also to accelerate the development of capabilities. Surveys of military innovation over the past century have similarly shown that multiorganizational arrangements such as those pursued by OFT "fosters technological progress and innovations."⁷
4. *Sufficient resources are required for change agents to be effective.* Altering the way organizations operate or, in the case of DoD, developing advanced capabilities requires adequate resources. This was true in the case of OFT which

⁷ Mark D. Mandeles, *Military Transformation Past and Present: Historic Lessons for the 21st Century* (Westport, CT: Praeger International Security, 2007), 89.

was able to advance its specific initiatives when it had adequate resources to do so. However, many believed that OFT as an organization was not provided enough funding to achieve its broader agenda of transforming the department. Some believed that the office could have either pursued a broader set of initiatives, pursued some of their initiatives more aggressively, or both. In addition, a larger budget for OFT may have caused other elements of DoD to take OFT more seriously, because of the amount of resources it controlled.

5. *Opposing bureaucratic inertia can stifle change agency efforts.* Although already well-established in the literature on organizational change, the experience of OFT again demonstrated that opposition encountered from the bureaucracy can slow change agendas. Bureaucratic inertia of the type encountered by OFT has been called the “Achilles heel” of military change preventing transition to new ways of doing things.⁸ Resistance to OFT came from all directions: the Military Services, other elements of the Office of the Secretary of Defense (OSD), and selected members of Congress. Most of those interviewed noted that this inertia greatly limited OFT’s ability to promote change and that the greatest opposition came from the Services.

These are just a few of the major findings from the research. In addition to those above, others were also revealed and each finding is more fully detailed and documented throughout this study. In addition, a series of prescriptive policy recommendations are

⁸ Adam Stulberg and Michael Salamone, *Managing Defense Transformation: Agency, Culture, and Service Change* (Burlington, VT: Ashgate Publishing, 2007), 4–5.

presented in the final chapter to aid an organization implementing a change agenda but contending with the challenges that exist.

B. Study Approach

This study addresses the research questions using an evaluative case study methodology that employs *embedded cases*. It examines the Office of Force Transformation (2001–2006) and its key initiatives to determine factors influencing their success or failure. The data sources include archives (briefings, meeting minutes, memoranda, etc.), government documents, speeches and hearings, a variety of secondary sources, and structured interviews with OFT staff, leadership, and outside (government and non-government) observers.

Addressing the central research question of whether the office was successful at advancing key initiatives involves defining success and applying metrics for determining whether or not it was achieved. These metrics and how they are defined are further described in Chapter Two. Although an attempt will be made to characterize the portfolio of programs that OFT pursued, only selected *key initiatives* will be examined in-depth to answer the research question. Those initiatives constitute three embedded cases upon which this study is based. The three cases are (1) Operationally Responsive Space, a tactical satellite program, (2) Project Stiletto, an M-hulled, all-composite boat, and (3) Education for Transformation, an effort to teach change and innovation at military institutions.

C. Organizational Context

Answering the research questions above requires a dual approach that considers both the dynamics of organizational change and the evaluation of program success (or failure). This study does so by drawing upon literature for evaluating organizational change in addition to offering an empirical framework for program evaluation. This framework is described in greater detail in Chapter Two. However, it is first important to understand the context within which the Department of Defense and the Office of Force Transformation operate.

The Office of Force Transformation was an independent office (reporting directly to the Secretary of Defense) within OSD. It coexisted within the larger Department of Defense with several other co-equal organizations but also contended with a multitude of organizations with more authority (either de jure or de facto). Some of these other organizations include, but are not limited to, other offices within OSD (e.g., OSD(Policy), OSD(Acquisition, Technology and Logistics) (AT&L), etc.) and military departments (e.g., Army, Navy, Air Force) and Defense Agencies (e.g., Defense Advanced Research Projects Agency, Defense Logistics Agency, etc.).

The primary unit of analysis for this study is the Office of Force Transformation. However, its interaction with and impact on the larger Department of Defense are also topics of investigation. Appreciating the dynamic between OFT and DoD along with the multitude of other organizational interlocutors is essential to addressing the research questions.

On September 10, 2001, Secretary of Defense Donald Rumsfeld stated that the Pentagon organization was “the adversary” and that its structure and culture stifles innovation (thus preventing transformation) “not by ill intent but by institutional inertia.”⁹ He cited reforms other sectors were making to their organizations to better adapt to a changing world while the DoD, by his estimation, was outdated both in organization and processes. Furthermore, these remarks and others by Rumsfeld and his leadership team suggest that organizational dynamics aren’t just important to understanding OFT’s experience advancing transformational initiatives but are an essential element of understanding the larger transformation agenda of DoD.¹⁰ Similarly, the scholarly community, which has examined military change throughout the centuries, also assumes that organizational inertia is the Achilles heel of transitioning from *sunset* technologies to newer, more innovative military capabilities.¹¹

Exploring organizational dynamics is a well-established field of study and many of its leading scholars and relevant work are introduced in subsequent chapters (see Chapter Three, “Literature Review”). Most relevant to this research are those scholars offering insights into the behavior of bureaucratic organizations, which is the type of structure and organizational culture that best describes the Department of Defense and its

⁹ Donald Rumsfeld, “DOD Acquisition and Logistics Excellence Week Kickoff—Bureaucracy to Battlefield” (speech delivered at the Pentagon, September 10, 2001). Available at <http://www.defense.gov/speeches/speech.aspx?speechid=430>.

¹⁰ Rumsfeld and his director of Office of Force Transformation, retired Vice Admiral Arthur Cebrowski routinely referenced the need for organizational change in public remarks and documents. For example, see the *Transformation Planning Guidance* (Washington, D.C.: Department of Defense, 2003).

¹¹ Stulberg and Salamone, *Managing Defense Transformation*, 4–5. The authors maintain that the essence of transformation is the sustaining of organizational change (33).

subcomponents. First referred to by Max Weber as a “traditional bureaucracy,” these are organizations based upon rational principles backed up by rules and a legal framework.¹² Charles Perrow further describes bureaucracies as organizations “set up to deal with stable, routine tasks” thus serving as the basis of efficiency.¹³

Much of the preceding research into bureaucracies and their organizational dynamics (structure, culture, processes, etc.) culminates in the work of James Q. Wilson, who applies it to bureaucracies in the United States and the U.S. Federal government, in particular.¹⁴ In addition to various other topics Wilson addresses in his work, of particular relevance to this study are his findings regarding organizational innovation and efficiency for which he draws upon specific experiences in the Department of Defense. Wilson defines organizational innovation not as just any new program or technology but “those that involve the performance of new tasks or significant alteration in the way existing tasks are performed.”¹⁵ This definition of innovation is not unlike its synonym *transformation* defined elsewhere in this study and in government documents as the ability to accomplish new tasks that weren’t previously possible, or only possible at a high cost (in lives or resources). A second topic of Wilson’s where he draws directly from DoD experiences with defining requirements and procuring new systems is that of

¹² Max Weber, *The Theory of Social and Economic Organization* (New York: Oxford University Press, 1947), 324–340.

¹³ Charles Perrow, *Complex Organizations: A Critical Essay* (Glenview, IL: Scott, Foresman and Company, 1979), 4–5. Features of bureaucracy such as *stability* and *routine* are frequently cited by other scholars of bureaucracy and organizational dynamics.

¹⁴ James Q. Wilson, *Bureaucracy: What Government Agencies Do and Why They Do It* (New York: Basic Books, 1989).

¹⁵ *Ibid.*, 222.

efficiency. He defines efficiency simply as the ratio of inputs to outputs and explains how this ratio is out of balance in most federal agencies thus resulting in inefficiencies throughout the bureaucracy.¹⁶ This study draws upon Wilson, Perrow, Weber, and others as it offers explanation as to why OFT may or may not have been successful in advancing key transformation initiatives.

D. Major Empirical Observations

While the study goes into much greater detail on this subject, there are a few major empirical observations that shape this investigation. Introducing them at this point provides some background as to why the study is framed as it is and how it uniquely contributes to the field of research.

First, although it once had more precise meaning, the term transformation became virtually meaningless over time.¹⁷ Definitions of the concept were advanced early but there was little agreement across the community. Furthermore, as the concept became more popular, everything became labeled as *transformational*, further contributing to its vagueness¹⁸

¹⁶ Ibid., 317-318.

¹⁷ Many have made this argument in recent years. See James Blaker, *Transforming Military Force: The Legacy of Arthur Cebrowski and Network-Centric Warfare* (Westport, CT: Praeger Security International, 2007); Frederick Kagan, *Finding the Target: The Transformation of American Military Policy* (Lanham, MD: Encounter Books, 2006); Else, “Organization Theory and the Transformation of Large, Complex Organizations,” 148.

¹⁸ There are countless examples of this in DOD documentation. For example, see Kenneth Krieg, “Defense Transformation,” briefing given by Under Secretary of Defense for Acquisition, Technology, and Logistics to the President of the United States, August 2006.

Transformation of the U.S. military involves shifting from old ways of conducting warfare to a new form of warfighting that is necessary to overcome future adversaries. Some argue that today's military transformation is the transition from an industrial age to an information age military.¹⁹ If fully realized, they contend, such a transition could be one of the most profound in the history of warfare.

For the purposes of this study, the study begins with the definition of transformation from the DoD *Transformation Planning Guidance* (TPG). The *TPG* states that transformation is:

A process that shapes the changing nature of military competition and cooperation through new combinations of concepts, capabilities, people and organizations that exploit our nation's advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world.”²⁰

However, according to the *TPG*, “shaping the nature of military competition” in transformation means redefining standards for military success by accomplishing military missions that were previously unimaginable or possible only at prohibitive risk and cost.²¹ This stricter definition requires a fundamental shift in capability and is more consistent with other definitions of transformation than is the broader definition. To the extent that the term is used, this study uses the latter, narrower, definition of transformation.

¹⁹ Arthur Cebrowski, “New Rules, New Era: Pentagon Must Embrace Information Age,” *Defense News*, October 21–27, 2002, 28.

²⁰ *Transformation Planning Guidance*, 3.

²¹ *Ibid.*, 3–4.

Another major factor that impacts research into the subject is the rapid proliferation of programs and organizations in DoD tasked with promoting transformation.²² Not only are there a number of actors responsible for some or all of DoD transformation, there are a few major actors whose roles and responsibilities for transforming the department are unclear (despite repeated efforts to clarify them).

These factors and others have made the formal study of DoD transformation challenging. Merely surveying DoD transformation is nearly intractable. That is, transformation became synonymous with everything in the DoD therefore a study of it is equivalent to a study of all of DoD during the George W. Bush administration (and beyond). Therefore, a more achievable research objective should examine a narrower formulation of transformation to develop findings that may permit academics and policy makers alike to say something more useful about transformation. Taken together, these empirical factors influence the research questions and design presented in this dissertation.

E. Organization of the Paper

The purpose of this introduction is to provide an overview of the nature of the subject, the research questions under investigation, and the approach for addressing them. Subsequent chapters provide greater detail on each of these, in addition to answering the study's research questions. Chapter Two presents the research design in-full and further describes the case study approach and means for applying it. The major literature in

²² See any number of DoD documents such as: *Transformation Planning Guidance*, *Quadrennial Defense Review Report* (2006), *Unified Command Plan*, etc.

related fields is reviewed in Chapter Three, focusing specifically on research in the fields of military change, defense resource management, and organizational dynamics. Chapter Four provides a background on the Office of Force Transformation to include its DoD predecessors, its inception, and eventual disestablishment. While in existence, the office advanced a number of initiatives and these are introduced in Chapter Four along with the selected initiatives that are the basis for evaluation in this study. Those initiatives are presented and analyzed in Chapters Five through Seven. The results of the analysis are presented in Chapter Eight along with findings, policy recommendations, and areas for further research.

CHAPTER TWO: METHODOLOGY

In fact, the truly hard part about change is *managing* the change. That requires backing up vague visions and lofty goals with concrete programs that can provide meaningful resources for new roles and functions, and offering incentives or compensation packages capable of appeasing institutional interests, especially the specific interests of those groups or communities most threatened by change. Irrespective of the core ideas involved, transformation efforts, whatever their stripe, often are perceived as organizational “trade-offs,” which invariably mean certain groups and assets are to be “traded,” or “right-sized,” out of the program.²³

Antulio J. Echevarria II, 2006
Challenging Transformation's Clichés

As evidenced by the mixed reviews that the DoD's transformation agenda received over the years, the processes involved with transforming the military were vast and complex. Leading the charge as the department's catalyst of change was the Office of Force Transformation. The office developed a strategy and pursued a myriad of initiatives to assist with transforming the nation's military. The purpose of this research is to determine whether the Office of Force Transformation was successful at advancing its key transformation initiatives. Doing so requires addressing a series of attendant research questions:

²³ Antulio J. Echevarria II, *Challenging Transformation's Clichés* (Carlisle, PA: Army War College, Strategic Studies Institute, 2006), 14.

- What were the Office of Force Transformation's key initiatives? Lesser initiatives?
- Would these initiatives have been advanced had OFT not pursued them?
- Did the political and bureaucratic prerequisites exist for the office to successfully affect change in the larger Department of Defense?
- What lessons from OFT are generalizable to affecting change in other complex organizations?

Exploring these issues will identify lessons from the department's experience with OFT that might be applied to future DoD change initiatives or perhaps even generalizable to other complex organizations seeking to implement change agendas. However, thorough treatment of the subject requires a multi-method analytic approach that bridges theory and practice. The approach must permit the examination of both the effectiveness of advancing key initiatives as well as consideration of the broader organizational context within which OFT pursued its goal of transforming the department. This chapter outlines such an approach and how it is applied to answering the research questions. It begins with discussion of the research design to include conceptual and empirical frameworks and the case study method applied in this study. The next section describes the sources of data drawn upon in the study. The chapter concludes by addressing how the data will be analyzed to answer the research questions and draw findings and conclusions that might be applied to strengthening similar policy initiatives in the future.

A. Research Design

To investigate whether OFT was successful at achieving key transformation initiatives, this study takes an evaluative case study approach. A series of metrics for measuring success are applied and three embedded case studies are developed for evaluation and to provide a richer understanding of the office and the environment in which it operated.²⁴ The three cases were selected by the author as *leading* initiatives based upon a preliminary literature review and confirmed by a small group of experts through pilot interviews and then again by the twenty experts interviewed for this study most of whom agreed these were the office's leading initiatives. These cases offer insights into the research questions and aid in the identification of lessons for future change initiatives.

1. Case Study Methodology

Addressing the research questions above is best conducted using a case study methodology. A case study is an "in-depth study of a single unit (a relatively bounded phenomenon) where the scholar's aim is to elucidate features of a larger class of similar phenomena."²⁵ The purpose of case research may be descriptive, theory testing, or theory building (or some combination). Although other methods for this research may be

²⁴ W. Gibb Dyer Jr. and Alan L. Wilkins, "Better Stories, Not Better Constructs, to Generate Theory: A Rejoinder to Eisenhardt," *Academy of Management* 18 (1991): 619. See also Michael Barzelay, "The Single Case Study As Intellectually Ambitious Inquiry," *Journal of Public Administration Research and Theory* 3 (1993): 313. Both Dyer and Wilkins and Barzelay speak to the value of case study for detailed descriptions of a complex environment to better understand and explain interactions.

²⁵ John Gerring, "What is a Case Study and What is it Good For," *American Political Science Review* 2 (2004): 341.

envisaged, they each suffer from limitations in scope and applicability to the questions at hand. Furthermore, a case study permits the careful investigation of the various factors and could provide greater explanatory power in the end (than a single quantitative method alone). The case study approach applied in this research is heuristic in nature, meaning no formal framework or theory will be identified and tested a priori.²⁶ This is because the research is intended to contribute to theory development rather than test existing theory. Moreover, the case under investigation draws upon multiple disciplines (organizational dynamics, sociology, political science, etc.) and would be poorly served by focusing on a single framework from any one of them.

Evaluative Case Study Design

A variety of types of cases studies exist and are routinely used across academic disciplines. Examples include descriptive, interpretive, exploratory, explanatory, etc. This study uses an evaluative case study methodology since its primary research question involves determining whether the Office of Force Transformation was successful in achieving its key initiatives. An evaluative case study includes “‘thick description’, is grounded, is holistic and life-like, simplifies data to be considered by the readers, but most importantly, weighs up the information to enable a judgment to be made.”²⁷

Evaluative case studies are particularly useful for evaluating programs or processes when they are unique and “when an established program is implemented in a new setting, when

²⁶ Harry Eckstein, *Regarding Politics: Essays on Political Theory, Stability, and Change* (Berkeley, CA: University of California Press, 1992), 144–145.

²⁷ Kevin Laws and Robert McLeod, “Case Study and Grounded Theory: Sharing Some Alternative Qualitative Research Methodologies with Systems Professionals” (paper presented at the 22nd Annual International Conference of Systems Dynamics Professionals, Oxford, England, July 25–29, 2004).

a unique outcome warrants further investigation, or when a program occurs in an unpredictable environment.”²⁸ These conditions are all true of the Office of Force Transformation and its attendant initiatives.

As a type of case, evaluative studies involve description, explanation, and judgments rendered about the program (or programs) under examination.²⁹ This investigation of the Office of Force Transformation follows this format by first describing the office and its key initiatives, then explaining their evolution and, finally, rendering *judgment* about whether the initiatives were successful. In evaluative case studies, determining whether programs were good or successful requires the skill of judgment. There are several established ways of applying this skill of judgment.

Drawing upon a classic case study schema, Barzelay introduces two keys to applying judgment in evaluative studies to ensure it remains objective.³⁰ The first is an evaluative frame (or metrics) to facilitate normative reasoning about good administration. This involves the clear specification of standards based upon prior work in a way that is transparent to the observer. The second is consideration of whether *reasonable* administrative choices were made and how they apply to the standards. To be objective, this needs to be done on a firm evidentiary basis making the logic of the evaluation

²⁸ Edith Balbach, *Using Case Studies to do Program Evaluation* (Stanford, CA: Stanford University School of Medicine, 1999), 4. Available at <http://www.case.edu/affil/healthpromotion/ProgramEvaluation.pdf>, last accessed August 2011.

²⁹ S. B. Merriam, *Qualitative Research and Case Study Applications in Education* (San Francisco: Jossey-Bass Publishers, 1998), 39.

³⁰ Barzelay, “The Single Case Study As Intellectually Ambitious Inquiry,” 315-316. Barzelay is referencing a case study schema applied by Jerry Mashaw, *Bureaucratic Justice: Managing Social Security Disability* (New Haven, CT.: Yale University Press, 1983).

apparent. Rueschemeyer offers another suggestion for helping ensure judgment remains as objective as possible and that is constantly iterating the theory (or findings) with the evidence during the analysis.³¹ This process can serve to eliminate bias in results.

Observing these basic tenets of evaluative case study avoids one of the main criticisms of the approach: introducing value judgments. To the extent that these steps to applying judgment are “treated solely as a methodological basis for describing and explaining what occurred, such research is value-neutral” and avoids the major criticism of the approach.³² The approach outlined in this chapter is designed to avoid such pitfalls and applies an evaluative framework (or metrics) upon which to base judgments.

Strengths of Case Study Approach

There are several reasons for preferring a case study approach to analyzing complex organizations—some are methodological and others are unique to the questions under investigation. A few of the more compelling reasons to prefer the approach for this research include conceptual validity, understanding causal relations, and appreciating the complexity of organizations. Case studies aid with ensuring a high level of conceptual validity in that they “help to identify and measure the indicators that best represent the

³¹ Dietrich Rueschemeyer, “Can One or a Few Cases Yield Theoretic Gains,” *Comparative Historical Analysis in the Social Sciences*, ed. James Mahoney and Dietrich Rueschemeyer (New York: Cambridge University Press, 2003), 312-318.

³² Peter Foster, Roger Gomm, and Martyn Hammersley, “Case Studies as Spurious Evaluations: The Example of Research on Educational Inequalities,” *British Journal of Educational Studies* 3 (September 2000): 226. Foster, et al. go on to stress that evaluative cases do not present the only way of evaluating a particular program or event but that the author can work to ensure they are as objective as possible.

theoretical concepts the researcher intends to measure.”³³ The danger in some quantitative studies is that they run the risk of “conceptual stretching” by combining data from dissimilar cases whereas single or small sample case studies can preserve the integrity of the concepts evaluated assuming cases are selected carefully.

Another strength of the approach is that case studies enable a better understanding of the causal mechanisms at play. Within a single case (or a small sample), researchers can “look at a large number of intervening variables and inductively observe any unexpected aspects of the operation of a particular causal mechanism or help identify what conditions present in a case activate the causal mechanism.”³⁴ Conversely, many statistical studies omit or overlook the intervening variables that provide important insight into and explanation of the studied phenomena.

Although there are other strengths of case studies, a final strength to note of relevance to the topic here is that the method is uniquely suited for research into “loosely coupled systems.” These systems are complex organizations characterized by a high degree of autonomy among their interdependent parts and isolation between the strata.³⁵ This describes the Office of Force Transformation and the larger DoD enterprise within which it operated—highly autonomous entities (Military Services, the Office of the Secretary of Defense, Combatant Commands, etc.) that are interdependent through their

³³ Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge, MA: MIT Press, 2004), 19.

³⁴ George and Bennett, *Case Studies and Theory Development*, 21.

³⁵ Ronald Corwin, “Patterns of Organizational Control and Teacher Militancy: Theoretical Continuities in the Concept of ‘Loose Coupling’,” in *Research in Sociology of Education and Socialization*, ed. Alan C. Kerckhoff (Greenwich, CT: JAI Press, 1981), 262.

reliance—bureaucratic, financial, etc.—on one another. Vaughn and others argue that case studies are especially useful for analyzing cases since, when compared to other methods, they have “advantages for elaborating theoretical constructs focusing on large, complex systems that are difficult to study.”³⁶

2. Case Selection

This study examines a single unit of analysis: the Department of Defense Office of Force Transformation (November 2001–October 2006). Given the focus of the research, this is the only unit that can provide insights into the questions. Other cases are not relevant to addressing how successful OFT’s key initiatives were. Other cases of offices throughout the Federal government chartered with catalyzing change could strengthen the results of this single case, but are beyond the scope of the study. Some attempt will be made in conclusion to determine whether or not there are findings that are generalizable outside of the DoD.

Single Unit, Embedded Cases

Although this study focuses on a single unit, it includes three distinct embedded cases (to be introduced below) which are selected key initiatives pursued by OFT. Embedding cases offers “multiple levels of analysis” and increases the explanatory power

³⁶ Diane Vaughn, “Theory Elaboration: The Heuristics of Case Analysis,” in *What is a Case: Exploring the Foundations of Social Inquiry*, ed. by Charles C. Ragin and Howard S. Becker (New York: Cambridge University Press, 1992), 186.

and evaluative comprehensiveness of case study methods.³⁷ In Gerring's taxonomy of case study types, this would be a "Type II" examination given that it breaks down the primary unit—the Office of Force Transformation—into three subunits that are then subjected to synchronous covariational analysis.³⁸

Purposive Selection

The selection of cases for in-depth investigation is an important task that must be performed carefully so as to avoid bias that would undermine the results of the study. There are three general types of sampling or selection of cases: random, purposive, or convenience. Sampling that is random involves generating a list of all units in a population and then arbitrarily choosing a subset among them. Purposive sampling is most common in case studies when there are particular phenomena under study that the researcher wants to ensure are included in the sample. Sampling based upon convenience involves choosing cases based upon proximity (temporal, geographic, etc.) to the researcher to expedite the research.

The two leading factors driving the selection of cases for this study included ensuring (1) the cases provided a representative sample, and (2) there was variation in the aspects of practical and theoretical interest. For these reasons, the study employs a purposive selection mode that involved selection of cases for specific reasons. Although some critics of selection process have argued that it leads to bias, "purposive methods

³⁷ Kathleen M. Eisenhardt, "Building Theories from Case Study Research," *Academy of Management Review* 4 (1989), 534 and R. K. Yin, *Case Study Research Design and Methods* (Thousand Oaks, CA: Sage, 1994).

³⁸ Gerring, "What is a Case Study and What is it Good For?" 343–344.

cannot entirely overcome the inherent unreliability of generalizing from small-N samples, but they can nonetheless make an important contribution to the inferential process by enabling researchers to choose the most appropriate cases for a given research strategy, which may be either quantitative or qualitative.”³⁹

Several specific criteria led to the selection of cases introduced below. First, since the study involves addressing whether OFT was successful at advancing its *key transformation initiatives*, the cases selected should be among those that would widely be considered amongst the office’s leading initiatives. Next, they should be representative of the types of initiatives that the office pursued. The office long argued that transformation of the military involved both advances in technology and changes to the organizational culture and doctrine and that one should not occur without the other.⁴⁰ Therefore, the initiatives should represent programs aimed both at technological and cultural change of the military. Lastly, to avoid bias, the cases should not be either clear successes or failures a priori. Such determination is the subject of this inquiry and should not be obvious at the outset.

Case Summary

The three key transformation initiatives selected as embedded cases for this research include: Operationally Responsive Space, Project Stiletto, and Education for

³⁹ Jason Seawright and John Gerring, “Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options,” *Political Research Quarterly* 2 (June 2008): 295–296.

⁴⁰ Office of Force Transformation, *Military Transformation: A Strategic Approach* (Washington, D.C.: Department of Defense, 2003), 22–24. Available at <http://www.iwar.org.uk/rma/resources/transformation/military-transformation-a-strategic-approach.pdf>, last accessed January 2012.

Transformation. They are summarized below and fully detailed in Chapters Five through Seven. These cases were selected based upon their importance to the office and the wider department.

An attempt was made to choose both concrete programs and broader initiatives that were at the core of OFT's goal to change more than just what technology DoD develops, but also the department's culture and management. An attempt was also made to remain blind (at the outset) to program success, and to focus on selecting initiatives most representative of the office's mission. The initiatives were selected by the author based upon the initial literature review and scoping of the research. The research design permitted selection of other initiatives, should those chosen have been found to be secondary (or not among OFT's leading programs). The questionnaire developed for the semi-structured interviews provided the opportunity to elicit expert judgments on the office's leading initiatives a priori, before the specific programs were introduced to the respondents. The questionnaire was first piloted with a small group of experts who nominated those cases already selected for this study as among the office's leading initiatives. Similarly, a majority of the twenty experts interviewed for this study also agreed that the cases met these criteria and were the office's leading initiatives.⁴¹

⁴¹ The interview questionnaire, both piloted and in final form, asked respondents "what were some of the office's leading initiatives" before they were asked specifically about those initiatives chosen for the study. The purpose of the question and its order (in the questionnaire), was to either confirm the selection of the cases chosen or provide alternative leading initiatives that should instead be evaluated.

Operationally Responsive Space. This is the concept of tactical satellites that are smaller, lower-cost, and easier to maneuver.⁴² The idea was generally eschewed by the Air Force (which controls military satellites) because their institutional preference is larger satellites with greater capability. OFT saw a niche and both sponsored tactical satellite development and aggressively marketed the concept. After OFT was dissolved, the Air Force continued the program under the same name.⁴³

Project Stiletto. The project is an all-composite M-hulled ship whose original development and experimentation was sponsored by OFT.⁴⁴ The office wanted to promote alternative hull designs in an attempt to influence larger programs like the Littoral Combat Ship (LCS). The early experimentation was successful and the Stiletto program was continued after OFT was dissolved. It is currently sponsored by the Rapid Reaction Technology Office of DoD, has been fielded twice, and is presenting a challenge to more conventional hull designs and revolutionizing the way the military thinks about naval vessels (for example, it was named one of *Time* magazine's top ten inventions of 2006).⁴⁵

⁴² Les Doggrell, "Operationally Responsive Space: A Vision for the Future of Military Space," *Air and Space Power Journal* 2 (Summer 2006). Available at <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj06/sum06/doggrell.html>, last accessed January 2012.

⁴³ Department of Defense, "Operationally Responsive Space Office," available at <http://ors.csd.disa.mil/>, last accessed January 2012.

⁴⁴ See M Ship Co, "M Ship Co.," available at <http://www.mshipco.com/>, last accessed January 2012.

⁴⁵ "Best Inventions of 2006: The Military, Low Rider," *Time*, 2006, available at http://www.time.com/time/specials/packages/article/0,28804,1939342_1939443_1939754,00.html, last accessed January 2012.

Education for Transformation. A goal of OFT was to transform the culture in DoD and they saw professional military education (PME) as a primary way of doing that. Therefore, OFT developed “transformation chairs” at each of the major PME institutions and shared the cost with the host institution.⁴⁶ The faculty was to teach and research military change and innovation with the intent of reaching the next generation of military leaders. A companion piece to the transformation chairs program were the transformation seminars sponsored by OFT. These focused on emerging topics such as stability operations and cyber-warfare (prior to the department’s interest in the subject).⁴⁷ Both the chairs and seminar programs continue today.

3. Key Variables

The primary unit (the Office of Force Transformation) and the subordinate cases under investigation are all comprised of *relevant dimensions* or variables.⁴⁸ Each of the variables typically consists of multiple observations that constitute the data collected for this analysis. These variables or dimensions all offer perspectives on the cases and ultimately provide the basis for answering the research questions.⁴⁹ Identification of the relevant variables in the case study drives the data collection plan in that it specifies the

⁴⁶ Center for National Security Policy, National Defense University, “International Transformation Chairs Network,” available at <http://www.ndu.edu/CTNSP/index.cfm?secID=77&pageID=1&type=section>, last accessed January 2012.

⁴⁷ Examples of the seminar topics are available at Center for National Security Policy, National Defense University, “Conference Reports,” at <http://www.ndu.edu/CTNSP/index.cfm?type=section&secid=28&pageid=4>, last accessed January 2012.

⁴⁸ Gerring, “What is a Case Study and What is it Good For?,” 342.

⁴⁹ Gary King, Robert Keohane, and Sidney Verba, *Designing Social Inquiry: Scientific Inference in Qualitative Research* (Princeton, NJ: Princeton University Press, 1994), 51.

types of data that will be evaluated during the study. For the purposes of this study, the variables fall into two categories—those variables internal to OFT and those external to the office. The main *internal* (to OFT) variables examined throughout this study include:

- **Leadership/Vision**—The role of leaders of organizations cannot be overstated. Their leadership combined with the strategic vision they outline for the organization can be important. Indeed, OFT’s Director, Vice Admiral Cebrowski, played a very large role in the achievements of the office.⁵⁰
- **Mission/Goals**—The stated mission of an organization also impacts its direction. How well the mission of an organization supports its parent organization is critically important.
- **Culture**—The organizational culture plays a role in the effectiveness of an organization and how well it works with other organizations. Culture can be either a great strength or weakness in pursuit of an organization’s mission.
- **Structure**—How an organization is structured and its relationship to other organizations in its sphere affect its functioning and ultimately, its success or failure. The structure of an organization interacts both positively and negatively with other key variables.
- **Personnel**—Either collectively or individually, an organization’s personnel affect its ability to pursue its goals. Their composition, skills, etc. may all contribute to their effectiveness.

⁵⁰ For example, see Blaker, *Transforming Military Force*.

- **Resources**—An organization's agenda is often a function of the financial resources it has at its disposal. Measuring the amount of resources can offer explanation about the performance of the organization and its specific initiatives.

In addition to the internal variables above, there are also variables external to OFT that must be explored in the case studies. Many of the variables are similar to the internal variables, except at the Defense Department level. The main *external* (to OFT) variables examined throughout this study include:

- **External Variables**—Six are similar to those outlined above, except at a DoD/national level: (1) Leadership/Vision, (2) Mission/Goals, (3) Culture, (4) Structure, (5) Personnel, and (6) Resources.
- **Other Actors**—External environments frequently involve multiple organizational actors pursuing similar goals. In the case of OFT, there were several outside organizations (e.g., the Services, Combatant Commands, defense agencies, etc.) that were assigned major portions of their original portfolio.
- **External Shocks** (i.e., acute events)—These are occurrences outside of the department that were unplanned but have a significant impact on the organization. In this context, examples include the attacks of September 11, 2001 and ensuing operations in Afghanistan, Iraq, and elsewhere.

B. Data Collection

Both a strength and challenge of the case study approach is the wealth of information typically available for collection and analysis.⁵¹ This increases the need to have a data collection plan that targets key variables and adequately seeks the multiple sources required to confirm and confound competing claims. In particular, this research focuses on the concept of triangulation, which seeks multiple sources of data to do just that—ensure the validity of data and thus the integrity of final conclusions.⁵²

1. Data Sources

The data required for this study fall into five major categories: archives, official DoD documents, speeches and hearings, secondary sources, and expert interviews. The data sources and examples of each include:

Archives. Much of the background material on the Office of Force Transformation resides in archival records. These archives include original memoranda between the office and the rest of the department, meeting notes, official briefings, etc. To the extent possible, these archives were accessed to provide depth in explanation of decisions and events.

Official DoD Documents. Another important data source is official DoD documents. Although the background that goes into their development and the resultant

⁵¹ See Eisenhardt, “Building Theories from Case Study Research,” 539 and Laws and McLeod, “Case Study and Grounded Theory,” 13.

⁵² P. Lynn Kennedy and E. Jane Luza, “Toward Methodological Inclusivism: The Case for Case Studies,” *Review of Agricultural Economics* 2 (Autumn –Winter 1999): 587.

application and enforcement of the documents are as important (or more important in many cases), the official positions of the department are instrumental in providing a basis for analysis. Examples of official documents include: *National Security Strategy*, *Quadrennial Defense Review*, *Transformation Planning Guidance*, *Unified Command Plan*, etc.

Speeches and Hearings. Some of the motivation for decisions codified in formal documents and elsewhere is found in public speeches and congressional hearings. This is especially true of the topic of transformation, which owes much of its attention in recent years to the famous “Citadel Speech” offered by then presidential candidate George W. Bush. Hearings too can provide insights into motivations and intent. For example, the U.S. Senate Subcommittee on Emerging Threats and Capabilities in 2003 held a hearing largely about the *Transformation Planning Guidance* where much was said about members’ views on transformation and their support (or lack thereof) of it.

Secondary Sources. The topics covered by this research are wide and varied. Much has already been written on them and is included and built upon in this study. These secondary sources include press reporting, scholarly research, government reports (Government Accountability Office, Congressional Research Service, etc.), and formal studies (Defense Science Board, National Defense Panel, etc.).

Expert Interviews. Perhaps the best source for insights into the topic under investigation is the experts involved with creating, staffing, and interacting with the Office of Force Transformation. Such perspectives are essential to understanding the relationship between variables in this case and also in determining whether any of the

study findings may be generalized to a larger population. Naturally, experts come with their respective biases. This research weighs varying perspectives to come as close as possible to identifying an objective reality. The following section provides additional detail on the interview approach.

2. Interview Methodology

Expert perspectives were collected using a multi-stage interview methodology designed for this study. The methodology involved identification and selection of participants, interview design and testing, conducting of the interviews, and collection of the data. Additional details on those interviewed for this study appear in the appendix.

Identification and Selection of Study Participants. The initial list of prospective study participants was developed through identification of experts in the literature, researcher (professional) knowledge of the field, pre-existing contacts, and nomination of participants through those interviewed. From this list of potential participants, several were selected to interview. Rather than a random selection process, a purposive sampling technique was again utilized (as with case selection described above).⁵³ Some reasons for this included small sample size and the need to obtain multiple perspectives. Several criteria were applied to help ensure variation across the sample to include:

- Military experience-civilian or military
- Relationship to the office-a former member of the office or outside observer/interlocutor

⁵³ Y.S. Lincoln and E.G. Guba, *Naturalistic Inquiry* (Newbury Park, CA: Sage Publications, 1985), 102.

- Position-staff or leadership
- Span of subject matter expertise- portfolio of expertise or generalist

Once the prospective participants were selected, they were contacted (typically via, email) using a letter requesting an interview. Fortunately, the interview response rate was very high so most of those participants selected agreed to be interviewed. Once the interview was scheduled, a one-page study précis was provided in advance to provide participants with study background and topics of discussion.

In selecting interview participants, achieving the proper balance across the criteria above was most important but consideration was also given to the proper sample size. There are varied perspectives on how many interviews should be conducted for case study research to provide meaningful insights and diverse perspectives.⁵⁴ Some have established ten–fifteen participants as the minimum required for meaningful results.⁵⁵ Although approximately twenty-five participants were targeted for this study, the final number interviewed was twenty. This falls well within the sample sizes described as *ideal* by many researchers in the field.

Interview Design and Testing. In designing the approach, a *structured* interview technique was used. Structured interviews are in-depth interviews aimed at maximizing qualitative responses in an ordered and methodical way that employs a common set of

⁵⁴ Studies on the subject indicate that saturation is reached (at a point when no new concepts or insights emerge) at fifteen–twenty participants. See Jörgen Sandberg, “Understanding Human Competence at Work: An Interpretative Approach,” *The Academy of Management Journal* 1 (February 2000): 13–14.

⁵⁵ Keith Trigwell, “A Phenomenographic Interview on Phenomenography,” in *Phenomenography*, eds. John Walsh and Eleanor Bowden (Melbourne, Australia: RMIT University Press), 62–82. These standards apply to phenomenographic research but the discussion of the research needs and reasoning behind sample size can be applied to other methods throughout the social sciences.

questions posed to each interviewer. They are often used, as they were for this study, as a “precursor for more open-ended discussions such as non-directive interviews.”⁵⁶

For this study, in particular, a structured approach was taken to maximize the amount of information obtained from the respondents during a short period of time and to improve validity and reliability of results. Furthermore, a structured interview approach facilitates the compilation and analysis of data given that all respondents answer a common set of questions.

Once an initial interview questionnaire was developed, it was tested against the research questions to determine how well they were addressed by the questionnaire. After revising accordingly, the questionnaire was then pilot tested with a small group of colleagues (with some knowledge of the subject matter) to obtain insights into its appropriateness, precision, and time it might take respondents to complete. Based upon the pilot, revisions to the questionnaire were made resulting in the version that was taken into the interviews.

Study Interviews and Data Compilation. Once interviews with respondents were scheduled, each was provided with a short, one-page “read ahead” providing study background and general topics of questioning. At the interview, the first matter was to obtain informed consent and then to provide the respondent with a study overview. The interviews themselves typically lasted sixty minutes although some lasted longer based upon the respondents’ schedule and interest in the topic.

⁵⁶ David E. Gray, *Doing Research in the Real World* (London, England: Sage Publications, 2004), 215. For more on structured interviews, see also Laws and McLeod, “Case Study and Grounded Theory,” 13–14.

The interview data was captured using two parallel techniques: extensive note-taking and audio digital recording. At the conclusion of the interview, researcher notes were taken to capture any especially notable insights and to record notes on the interview experience and how it might be improved.

The data resulting from the interview included extensive notes and digital audio recording. No direct transcription of the interview was performed due to the nature of the research and the intended use of the data. However, the interview notes were compiled into an interview log, typed, and then verified for accuracy by replaying the digital recording.⁵⁷

C. Analytic Framework

Data collection, coding, and analysis throughout this study were performed iteratively with overlap between these steps. This naturally overlapping, rather than strictly sequential, processing of data is a preferred method in case study research.⁵⁸ The data collection approach in the previous section, together with the data analysis process outlined in this section form the overall analytic framework for the study as depicted in Figure 1.

⁵⁷ Merriam, *Qualitative Research and Case Study Applications in Education*, 178. According to Merriam, interview logs are suitable substitutes for full transcription as long as detailed coding and structuring of the interviews is not required.

⁵⁸ For example, see B. Glaser and A. Strauss, *The Discovery of Grounded Theory: Strategies of Qualitative Research* (London: Wiedenfeld and Nicholson, 1967).

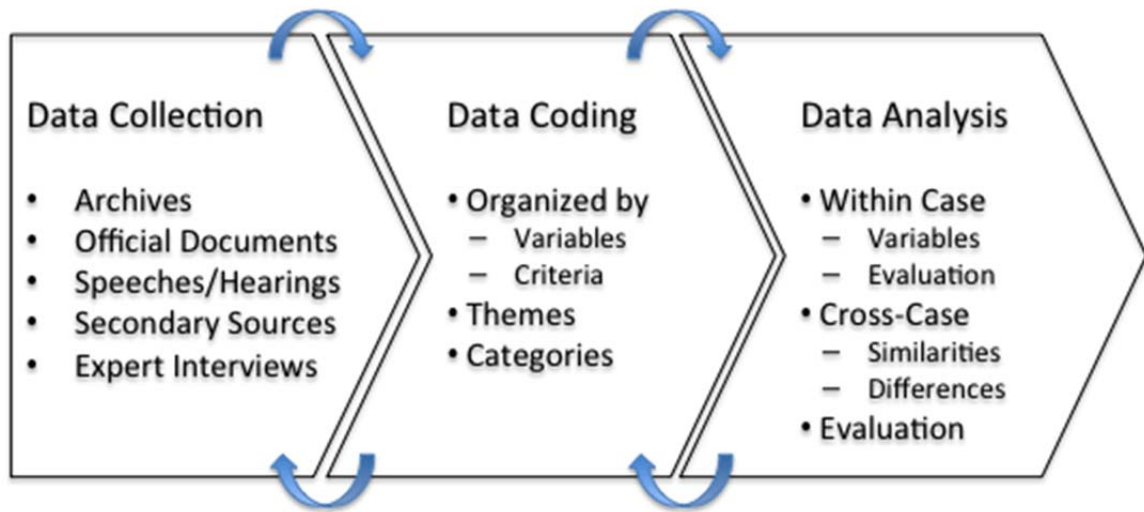


Figure 1: Depiction of Analytic Framework

1. Data Analysis

The analysis of data is at the center of a research project, as it is in this study. Organizing the massive amounts of data collected and addressing the research questions requires a well-formulated, but simple approach to analyzing it. This study examines the Office of Force Transformation, evaluating it along with three of its leading initiatives, which comprise the three embedded cases under investigation. These cases are documented using a narrative strategy that constructs stories from diverse and varied raw data.⁵⁹

⁵⁹ Ann Langley, “Strategies for Theorizing from Process Data,” *Academy of Management Review* 4 (1999): 697.

Both within case and cross-case analysis was performed for each of the three cases.⁶⁰ The within case analysis involves the identification of the key variables and the interaction between them. The evaluation criteria (described below) are then applied to develop judgments about whether the office was successful at advancing the initiative. Then, cross-case analysis is conducted to identify similarities and differences across the cases to generate themes and draw conclusions.

2. Evaluative Criteria

As stated above, evaluative case studies require determining whether a program, event, organization, etc. was good or, in the case of this research, successful. This involves applying judgment skillfully and objectively, and one primary way of doing this, according to Barzelay and others, is to introduce evaluative frameworks to the analysis.⁶¹ Such frameworks facilitate objectivity of analysis and replication of results. They help render the analysis more transparent by permitting researchers to see how the conclusions were drawn.

The criterion that will be used in this study to assess the key initiatives of the Office of Force Transformation and determine whether it was successful at advancing them is *performance*. Organizational theorists and administrative scientists alike widely consider performance as the ultimate criterion in assessing an organization.⁶² Van de Ven

⁶⁰ Eisenhardt, "Building Theories from Case Study Research," 539–541.

⁶¹ Barzelay, "The Single Case Study as Intellectually Ambitious Inquiry," 315–316.

⁶² Stanley E. Seashore and Ephraim Yuchtman, "Factorial Analysis of Organizational Performance," *Administrative Science Quarterly* 1 (December 1967): 377.

describes performance as a “complex construct which reflects the factors used by decision makers to assess the functioning of an organization.”⁶³ He and others contend that performance is ultimately a value judgment that is a composite of criteria applied for evaluation, typically, productivity and effectiveness.⁶⁴ Although sometimes considered a part of effectiveness, Lyden called out a third criterion for evaluating organizational performance: impact or difference (an organization or program made).⁶⁵ In evaluating an organization or program, it is important to consider a variety of measures and not a single measure to accurately evaluate its performance, which is why these three measures are used in concert.⁶⁶ Further, Bennis argues that the multitude and changing nature of an organization’s goals calls for multiple methods for measuring performance.⁶⁷

For the purposes of this study, the following measures of performance will be applied to the office’s key initiatives and operationalized as described below: productivity, effectiveness, and impact. However, several important considerations must be noted before further defining these measures. First, the primary means of addressing the research questions is through the application of these criteria to the three embedded

⁶³ Andrew H. Van de Ven, “A Framework for Organizational Assessment,” *Academy of Management Review* 1 (January 1976): 73.

⁶⁴ Ibid.; Seashore and Yuchtman, “Factorial Analysis of Organizational Performance,” December 1967, 377.

⁶⁵ Fremont J. Lyden, “Using Parsons’ Functional Analysis in the Study of Public Organizations,” *Administrative Science Quarterly* 1 (March 1975): 64.

⁶⁶ Warren Bennis, *Beyond Bureaucracy: Essays on the Development and Evolution of Human Organization* (San Francisco, CA: Jossey-Bass Publishers, 1993), 49. In particular, Bennis argues that an organization’s ability to adapt to change should be considered when evaluating its performance.

⁶⁷ Ibid., 44.

cases under investigation. While they can be answered, in part, by looking broadly at the office's portfolio, the detailed assessment will be of each of the three cases.

Another important consideration is that judgments rendered on whether the office was successful are sensitive to the timeframe under consideration. That is, the answer to the question could be different if it is examining the first three years after the office was closed or the four–ten year timeframe (post OFT) or even ten–fifteen years out. This study focuses on the four–ten year timeframe, given that is when the research was conducted. It can be argued that this is the best timeframe for assessing the impact of OFT given that most programs require a few years (from initiation) to see any results that may be tied to the program. Conversely, timeframes ten–fifteen years out are difficult to consider because many other environmental changes occur in the intervening years (since the program was initiated) to definitively link changes in the environment back to the original program.

A third major consideration in the evaluation of the office and the three cases selected for this investigation is the varying types of available data. That is, not all data for all cases will be available. For example, detailed budgeting or staffing data may be available for one case but not another. Attempts were made to ensure data availability for each case across all types of data, but this was not possible in every instance.

As introduced above, the three measures of performance applied to evaluating the office and the three programs selected as cases are: productivity, effectiveness, and impact (or endurance). Each is defined and operationalized below.

Productivity. This traditional performance measure is defined as comparison of program input (or costs) versus its output (or results).⁶⁸ The purpose is to assess the return on investment of a program to determine whether it was worth pursuing. To weigh inputs versus outputs and judge whether a program was productive requires identifying the types of both that are relevant to the office. Examples of the types of inputs considered in each OFT program include (1) level of program funding over time, (2) staff/manpower equivalents dedicated to each effort, (3) amount of leadership/management time or energy.

The inputs above are weighed against outputs to evaluate the productivity of an initiative. Outputs considered for this study include (1) the new capabilities resulting from a program, (2) the innovation of an existing capability, (3) resulting force structure or Service program change, (4) changes in business processes or concepts. For the purposes of this study, *capabilities* are the ability to achieve specified military objectives and may come in the form of military technology or changes in tactics or doctrine.

Effectiveness. Another measure of organization or program performance is the extent to which it achieves the goals of an organization, otherwise defined as *effectiveness*.⁶⁹ This is ultimately a judgment of the investigator based upon data that is

⁶⁸ Productivity is considered the leading measure of performance and usually defined as a ratio of input versus output. See Van de Ven, "A Framework for Organizational Assessment," 74–75 or Alan W. Imershein, "Organizational Change as a Paradigm Shift," *The Sociological Quarterly* (Winter 1977): 33–43.

⁶⁹ See Gene A. Brewer and Sally C. Selden, "Why Elephants Gallop: Assessing and Predicting Organizational Performance in Federal Agencies," *Journal of Public Administration Research and Theory* 4 (2000): 689 and Stanley E. Seashore and Ephraim Yuchtman, "Factorial Analysis of Organizational Performance," *Administrative Science Quarterly* 1, (December 1967): 377.

analyzed. The determination of whether goals are met can be based upon either *prescribed* or *derived* goals.⁷⁰ Prescribed goals are those organizational or program goals that are clearly advertised and stated in documents or public pronouncements. Derived (or functional) goals are developed by the researcher from a variety of sources based upon logical consistency (often used when the prescribed goals are not the most reflective of what an organization was in pursuit of). Actual accomplishment of the goals is difficult in new programs with long-term goals, as was the case with OFT. In such instances, effectiveness is measured by the extent to which programs support the stated goals. Only after many years have passed may the programs be assessed to determine definitively whether they accomplished the goals.

Impact. The final measure of performance assessed by this study is the impact of a program/organization or its endurance.⁷¹ That is, the longer-term result of the initiative and the lasting effect it had. In the case of OFT, this can be seen by whether an initiative continued beyond the existence of OFT (2006). That is, whether another organization continued to sponsor the program in some form. This reveals whether a program is deemed valuable outside of the original sponsoring organization—OFT. A program's endurance can also be measured by the form of the initiative (sponsorship, size of program, etc.). This is a characterization of the nature of the program, if it continued. This includes the sponsoring organization, the size of the program (both staff and funding) and any other data that would characterize the nature of the program.

⁷⁰ Seashore and Yuchtman, "A System Resource Approach to Organizational Effectiveness," 893.

⁷¹ Lyden, "Using Parsons' Functional Analysis in the Study of Public Organizations," 64.

D. Summary

This study looks at whether the Office of Force Transformation was successful at advancing its key initiatives and the factors that affected its efforts. This chapter presents the analytic framework for addressing the subject. It introduces the evaluative case study approach applied in this investigation and the three embedded cases comprising the study. The primary sources of data are described along with the strategy for conducting expert interviews. This data is analyzed using both within case and cross-case techniques and a set of evaluative criteria are applied to provide an objective framework for evaluating the office's ability to advance its key initiatives.

CHAPTER THREE: LITERATURE REVIEW

“Transformation” is a much weaker concept. It was a term coined with no historical referent in the 1990’s, and its concrete meaning comes exclusively from the specific defense policy program it is used to describe. Transformation, after all, means nothing more than change. It is used now to imply a large change...⁷²

Frederick W. Kagan, 2006
*Finding the Target: The Transformation of
American Military Policy*

Although the focus of this research is not on transformation per se, it was the primary mission of the office under investigation. As Kagan and others observe, it was a term without “historical referent” and understanding it requires familiarity with the literature on military change. Furthermore, while there is virtually no research on the Office of Force Transformation, there is a body of existing literature in related fields upon which this research is built.⁷³ This chapter examines the theoretical and empirical literatures pertaining to topics relevant to the examination of the Office of Force Transformation and tries to add context to the term transformation. Four bodies of literature are relevant to this study: revolution in military affairs (RMA)/defense

⁷² Kagan, *Finding the Target*, 311.

⁷³ Existing literature on OFT was limited to news reporting, government documents, and occasional minor references in broader research on transformation.

transformation, defense resource management, organizational dynamics and theory, and case study methodology.

Table 1: Sub-Fields and Sub-Topics of Study

Field of Study	Topic
RMA/Military Transformation	History of Military Change
	Key Elements/Drivers of Change
	Recent U.S. Military Change
Defense Resource Management	Origins of Modern Defense Resource Management
	Evolution of Resource Management Activities
	Contemporary Defense Resource Management
Organizational Dynamics	Basics of Organizational Dynamics and Change
	Dynamics of Bureaucratic Organizations
Case Study Methodology	

Table 1 depicts these areas of literature and lists sub-fields of each. The purpose of this section is not to present all (or even most) of the literature in these areas, rather to provide an overview of major contributors in the field.⁷⁴ The chapter concludes with a summary of the literature reviewed and an explanation of why it specifically supports the stated research questions.

⁷⁴ A more comprehensive literature review was conducted as part of the original research proposal and is available upon request of the author.

A. Revolution in Military Affairs / Defense Transformation

Transformation of the U.S. military involves shifting from traditional ways of conducting warfare to a new form of warfighting that is necessary to overcome future adversaries. Some argue that today's military transformation is the transition from an industrial age to an information age military.⁷⁵ If fully realized they argue, such a move could be one of the most profound in the history of warfare. Indeed, this change was an increasingly popular subject addressed by national security scholars and practitioners alike around the world.

The definition and terminology of military transformation has differed over decades of study. Some scholars refer to transformation as “revolutions in military affairs” or a “military revolution.”⁷⁶ During the Cold War, the Soviet Union advanced the notion of a *military technical revolution*. Regardless of the terminology, all references to transformation describe a shifting of the military from one phase to the next. The characteristics of this shift may vary, but the basic premise remains the same—discontinuous, non-linear improvement of military capabilities. The relationship between RMA and transformation differs by scholar. Some suggest the former is a precursor to the latter while others suggest they are substantively different.

⁷⁵ Cebrowski, “New Rules, New Era,” 28.

⁷⁶ In fact, military transformation is seen by some as the way of pursuing an RMA. That is, if one accepts that the military must be “revolutionized” (e.g., the RMA thesis) than transformation is the ways and means by which one revolutionizes.

Although many scholars have addressed these topics over the past decade, three are worth noting for this research: Krepinevich, Murray, and Van Creveld.⁷⁷ Each made unique contributions that most others in the same field have built upon.

Andrew Krepinevich provided the intellectual basis for today's literature on military transformation, beginning with his work for Andrew Marshall, director of the DoD Office of Net Assessment. In *The Military-Technical Revolution: A Preliminary Assessment*, Krepinevich used the Soviet technological revolution as a starting point for laying the foundation of a similar U.S. revolution in military affairs.⁷⁸ His contributions continued over the years as he wrote widely on the topic of transformation. Krepinevich identified ten military revolutions since the fourteenth century.⁷⁹ He contends that military revolutions occur with the introduction of new technologies combined with innovative concepts and adaptive organizations to "fundamentally alter" the character of conflict.

Through his review of military change throughout history, Krepinevich makes several observations.⁸⁰ First, participants in a revolution are often slow to fully recognize its benefits. Next, a competitor in a revolution exploits emerging technologies to gain decisive military advantage. Third, it is possible for more than one competitor to exploit

⁷⁷ Several other scholars are included in the full literature review in the field statement; these are a subset of those selected because of their unique contributions to the field.

⁷⁸ Andrew Krepinevich, *The Military-Technical Revolution: A Preliminary Assessment* (Washington, D.C.: Department of Defense, Office of Net Assessment, 1992).

⁷⁹ Andrew Krepinevich, "Cavalry to Computer: The Pattern of Military Revolutions," *The National Interest*, Fall 1994, 30–43.

⁸⁰ Krepinevich, "Cavalry to Computer," 5.

the same emerging technology or operational concept. Fourth, the payoff of a particular technology may be so clear and profound that competition develops among those with the need and ability to compete.

Historian Williamson Murray conducted one of the broadest surveys of military revolutions.⁸¹ In a thorough investigation, Murray examines military revolutions dating back to 1300 to develop a historical framework to provide “guidance in understanding the potential magnitude of and direction of future changes in warfare.”

Murray’s framework begins by drawing a distinction between what he refers to as military revolutions and revolutions in military affairs (RMAs).⁸² Military revolutions “fundamentally change the framework of war” and bring systemic changes in politics and society. Whereas, RMAs are lesser changes in the military landscape that are aimed at devising new ways to defeat opposition. Murray observes that military revolutions are “uncontrollable, unpredictable, and unforeseeable,” and often coincide with a major RMA or clusters of RMAs. The relationship between military revolutions and RMAs can be more easily explained by the comparison that Murray draws between military revolutions and earthquakes in terms of their far-reaching, paradigm-shifting ramifications.⁸³ In the same way, he compares RMAs to the pre-shocks or post-shocks

⁸¹ Williamson Murray and MacGregor Knox, eds., *The Dynamics of Military Revolution 1300–2050* (New York: Cambridge University Press, 2001).

⁸² Williamson Murray, “Thinking About Revolutions in Military Affairs,” *Joint Forces Quarterly* (Summer 1997): 71.

⁸³ *Ibid.*, 73.

that surround earthquakes. They are the smaller changes that either give rise to, or follow a military revolution.

The historical role of technology in warfare and revolution is featured in the various works of Martin Van Creveld. In *Technology and War*, Van Creveld observes that “war is completely permeated by technology and governed by it.”⁸⁴ The argument for technological drivers of transformation/RMA has been made by several scholars since Van Creveld. For example, some have argued that the current revolution in warfare is dominated by several areas of technology including: all-weather precision weapons, stealth technology, unmanned aerial systems, tactical and operational space, and networked technology.⁸⁵ Technological determinists such as Van Creveld argue technology is the key driver of military transformation.

Timothy Came and Colin Campbell who examined DoD transformation from a *top-down* perspective have conducted a more recent study of changing military organizations.⁸⁶ They focused on DoD from 2001–2004 and looked more closely at the organizational considerations than the resulting military capabilities. Using an extrapolation-oriented case study approach, Came and Campbell were interested in how

⁸⁴Martin Van Creveld, *Technology and War: From 2000 B.C. to Present* (London: Collier Macmillan Publishers, 1989).

⁸⁵The list is adapted from Michael Vickers and Robert Martinage, *The Revolution in Warfare* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2004), 199. Although this list was chosen for illustration, it is similar to other lists of key technologies developed by other scholars of military revolution.

⁸⁶ See Timothy Came and Colin Campbell, “The Dynamics of Top-Down Organizational Change: Donald Rumsfeld’s Campaign to Transform the U.S. Defense Department,” *Governance: An International Journal of Policy, Administration, and Institutions* 3 (July 2010): 411–435; Timothy Came and Colin Campbell, “The Mechanics of Top-Down Organizational Change: Donald Rumsfeld’s Campaign to Transform the Defense Department, 2001–2004” (paper presented at the American Political Science Association Toronto Meeting, 2009).

the change agenda was implemented by Secretary Rumsfeld and the various impediments it encountered. Some of the leading challenges they noted were the pressures of ongoing operations, budget constraints, and internal resistance to change (however, finding that many interviewed for the study thought that the only way for change to succeed was from within, such as OFT). Came and Campbell took their approach from this initial work and also applied the framework to explaining the 2010 budget process under the Obama administration.⁸⁷

In addition to these and other scholars publishing widely on the topic, several relevant PhD dissertations also address some aspect of transformation. First, is the work of Richard Lacquement (2000) that examines the development of military capabilities immediately following the Cold War.⁸⁸ He contends that investments in these capabilities constitute what became the revolution in military affairs. Lacquement also argues that RMA supplanted the Cold War as the new focus of the Department of Defense.

Robert Tomes (2004) went on to examine military innovation during the twentieth century in his review of literature on the topic and selected cases of nuclear weapons and other technological developments.⁸⁹ He outlines the various aspects and

⁸⁷ Timothy Came and Colin Campbell, "Defense in Hard Times: Budget Pressure, High Demand and Defense Transformation in the Obama Administration" (paper presented at the American Political Science Association Annual Meeting, August 19, 2010). Available at <http://ssrn.com/abstract=1662028>, last accessed August 2011.

⁸⁸ Richard Lacquement, "Preaching After the Devil's Death: Shaping American Military Capabilities in the Post-Cold War Era" (PhD Diss., Princeton University, 2000).

⁸⁹ Robert Tomes, "Military Innovation and the American Revolution in Military Affairs" (PhD Diss., University of Maryland, 2004).

drivers of military innovation and concludes his analysis with a brief introduction to transformation planning under the George W. Bush administration.

Third, Ruth Scogna Wagner (2006) studied “planned” organizational change in her investigation of the Defense Department from 2001–2004.⁹⁰ Wagner took a phenomenographic approach and focused on the “sensemaking” of a handful of stakeholders in the department to capture their experiences with implementing a change agenda. Her results were focused on theoretical and empirical considerations (as opposed to policy implications) and provided insights into the management of change perceptions and how agendas are perceived at different echelons.

Perhaps most relevant to this research is the work of Steven Else (2004) who attempts to develop a theory explaining transformational change during Secretary of Defense Donald Rumsfeld’s tenure.⁹¹ He accomplishes this through a review of transformational initiatives from 2001–2003. Else then applies the work of organizational theorists Herbert Simon (“bounded rationality”) and Kenneth Arrow (“limits of organization”) to devise his own framework he calls the “government priority paradigm.” The research only selectively addresses transformation or the efforts of the Office of Force Transformation during its first few years, and instead focuses more on organizational theory without connecting the two.

⁹⁰ Ruth Scogna Wagner, “The Human Element of Organizational Transformation: A Phenomenographic Study of How Internal Stakeholders in the Federal Defense Organizations Experience and Make Sense of Planned Organizational Change” (PhD Diss., Fielding Graduate University, 2006).

⁹¹ Else, “Organization Theory and the Transformation of Large, Complex Organizations.”

B. Defense Resource Management

When OFT was established in 2001, one of the things it had to contend with was navigating the labyrinthian DoD processes for allocating and managing resources.

Although OFT was resourced, the Military Services, whose programs OFT hoped to influence, had to participate in annual budget battles and the wiles of the planning, programming, and budgeting system.

Understanding change in an organization requires understanding the processes for allocating resources across the enterprise. Where once the U.S. military was able to expend financial resources in times of war and then rationalize the costs, the twentieth century saw a reversal in that trend where defense resource management and future (military) force planning have come to dominate defense decision making. As observers have long cited, the distinction between strategy and resourcing is somewhat artificial and they are indeed two sides of the same national security equation. Therefore, if the defense strategy is military transformation, then understanding the history and basics of defense resource management is essential. Only through appreciation of how major resource decisions are made can planners attempt a historic shift in military capability.

The Department of Defense has a rich history of and extensive literature on the allocation and management of resources. As with the RMA and transformation field, a more thorough treatment of the literature on this topic was conducted during the field research leading up to this study (and thus is not fully documented in this volume). However, four topics/authors are worth introducing here: Charles Hitch and Roland

McKean, Goldwater-Nichols Legislation, Commission on Roles and Mission, recent studies and reform.

The modern approach to defense resource management dates back to the 1950's. Its intellectual foundation is frequently credited to Charles Hitch, an economist who had done considerable research in the nascent field of defense economics and was later appointed Assistant Secretary of Defense (Comptroller) by Secretary of Defense Robert McNamara.⁹² Called the Planning, Programming, and Budgeting System (PPBS), the approach traces its origins back to systems engineering, economics, and program budgeting theory. A number of academic and professional precursors to PPBS unfolded during the 1950's due in large part to the work of Hitch and colleague Roland McKean.

In numerous writings on the subject, Hitch and McKean identify several strategic rationales for instituting a deliberate force planning process in DoD. One reason is the attendant complexities of the nuclear age. Another reason is the economic considerations of developing and mobilizing the size of force necessary to win the Cold War. Third, is what they identify as the inherent uncertainty in the strategic landscape and the range of contingencies for which DoD must prepare.⁹³ Although the OFT's director, Vice Admiral Arthur Cebrowski (retired) would likely agree with the need for planning to

⁹² For more see Charles Hitch, "National Security as a Field of Economic Research," *World Politics* 3 (1960): 434–452 or Charles Hitch, "Economics and Military Operations Research," *The Review of Economics and Statistics* 3 (1958): 199–209.

⁹³ It is interesting to point out that much of the contemporary defense planning literature also points to "strategic uncertainty" as being a driver behind consideration of multiple scenarios and the need to "hedge." Hitch and others of the 1950's–1960's appeared to be driven by a similar uncertainty which would suggest that today's obsession with it may be a matter of degree rather than new strategic phenomena.

address uncertainties and complexities in the strategic environment, the office generally operated outside of the formal PPBS process and eschewed the deliberate procedure it relied on (as is documented elsewhere in this study).

For many observers, the defense reforms of the 1950's and early 1960's were just the beginning. The reforms seized control of the military from the Services and centralized authority in the Office of the Secretary of Defense. Despite the existence of the Joint Chiefs of Staff, the uniformed military remained divided along Service lines and lacked the centralizing forces the civilians in the Pentagon enjoyed. Instead, the four Services were left to their own devices and operated largely independent of an organizing authority.

The Goldwater-Nichols Act of 1986 changed this and did for the Military Departments what reforms had already done for the civilian leadership—centralized and consolidated authority. One long-time defense scholar wrote that the passage of Goldwater-Nichols “meant dropping the other shoe, centralizing the uniformed side of the Pentagon in parallel with the civilian side...”⁹⁴ Largely unnoticed outside of the defense establishment until years after its enactment, the landmark legislation included several key provisions that continue to shape civil-military relations to this day. In particular, the Goldwater-Nichols Act: made the Chairman of the Joint Chiefs of Staff (CJCS) the principal military advisor to the President and the National Security Council; created joint duty assignments for all advancing uniformed officers; provided autonomy

⁹⁴ Vincent Davis, “Defense Reorganization and National Security,” *Annals of the American Academy of Political and Social Science* 517 (September 1991): 158.

to the CJCS, permitting him to act independently and not simply as a spokesman for the Joint Service Chiefs; bestowed authority over the Joint Staff in the CJCS; created the position of Vice Chairman and presented the position with several duties; placed the CJCS (acting for the Secretary of Defense) in charge of the unified and specified commands.

Although the legislation was lauded for the specific roles it assigned the CJCS, it also included significant language that affected the broader civil-military equation along with higher-order national security activities. Despite some speculation to the contrary, the act tilted the balance towards the civilian side of the civil-military relationship. It did so by granting nearly all the new powers assigned to the CJCS to be exercised ultimately *through* the Secretary of Defense.⁹⁵ The requirements of the legislation did not end with the DoD and also included provisions for the White House; the most notable being a new requirement for an annual *National Security Strategy* report to be issued by the President. Versions of such a document had been issued in the decades prior, but it was not until Goldwater-Nichols that the requirement was formalized.

Department of Defense reform efforts did not end with the 1986 Goldwater-Nichols Act. On the heels of the Bottom-up Review (1993) came the 1994 Blue Ribbon Commission on Roles and Missions of the Military or CORM (initiated by Congress and led by Mr. John White). It was originally chartered to identify the principal military missions in the years to come so decision makers could work to sufficiently resource

⁹⁵ This provision provided the essential groundwork for contemporary defense reforms addressed in the next section.

these missions. However, the Commission reported out on something very different and never addressed the issue directly.

Rather than tackling the tough issue with which it was assigned—reexamining the roles and missions of the armed forces—the CORM called for three areas of change in the department. It reported that the department needed: (1) effective unified military operations, (2) productive and responsive support, and (3) improved management and strategic direction.⁹⁶ Each of these points included a series of attendant recommendations on how to achieve them. Calls for joint concepts and doctrine and a new command for joint force training and force provider were among the major recommendations. One recommendation out of the CORM that received immediate attention was the suggestion that a “quadrennial strategy review” be conducted.

Improving defense resource management is a never-ending exercise in the Department of Defense. One of its major motivators over the years has been change agendas such as the one advanced by the Office of Force Transformation. Some of the more significant efforts have been discussed in preceding sections. The momentum for reform has not slowed in recent years and has arguably been hastened by the emphasis over the past decade on transforming the military. This is supported by the fact that, since 1995, at least eighteen major DoD reform studies have been conducted by entities both inside and outside of the Pentagon.⁹⁷ To be sure, their impacts on DoD have varied

⁹⁶ Commission on Roles and Missions of the U.S. Armed Forces, *Directions for Defense* (Washington, D.C.: Department of Defense, 1995).

⁹⁷ The studies include: *Directions for Defense* (1995), *OSD Streamlining* (1997), *OSD: Creating a New Organization for a New Era* (1997), *Defense Reform Initiative* (1997), *Transforming Defense: National*

widely with some receiving much attention while others went largely unnoticed. Some recommendations common to several of the studies include: strengthen management function in OSD through creation of a second Deputy Secretary or a chief of staff position; consider major changes to the organizational structure of OSD; clarify roles and relationship between OSD and the Joint Staff; adopt better business practices; increase joint centers/commands for concept development, training, force provider, etc.; revamp PPBS by adopting a two year cycle, adhere to process timelines, and focus on output and performance metrics; strengthen the role of Combatant Commands in DoD processes; merge major staffs in the Services, Joint Staff, and OSD.

The preliminary work for this dissertation provides additional detail on several of these studies.⁹⁸ A few notable studies most directly relevant to this study are:⁹⁹

- *Joint Defense Capabilities Study* (“Aldridge Study”):¹⁰⁰ This 2003 study conducted by a DoD study team examined potential ways of strengthening the

Security in the 21st Century (1997), *Service Responses to the Emergence of Joint Decision Making Study* (1999), *Framing the Problem of PPBS* (2000), *U.S. National Commission on National Security in the 21st Century* (2001), *Project Equinox* (2003), *Enabling Joint Force Capabilities* (2003), *Next Steps on DoD Core Competencies* (2003), *Joint Defense Capabilities Study* (2004), *Further DoD Action for Successful Financial and Business Transformation* (2004), *Beyond Goldwater-Nichols Phase I* (2004), *OSD Reorganization: Two Deputies Proposal* (2004), *Management Agenda* (2005), *Beyond Goldwater-Nichols Phase II* (2005), *Quadrennial Defense Review 2006 Integrated Product Team #3 Project* (2005), *Beyond Goldwater-Nichols Phase IV* (2008).

⁹⁸ The *preliminary* work referenced throughout this chapter is in reference to the “field statement”—a documented requirement prior to submitting and defending the dissertation proposal. The field statement provides much greater detail into the literature reviewed for this study and is available upon request of the author.

⁹⁹ These studies are offered given their importance in recent DoD reform efforts. The author either participated in or advised each of the efforts.

¹⁰⁰ *Joint Defense Capabilities Study* (Washington, D.C.: Department of Defense, 2004). Available at http://www.acq.osd.mil/jctd/articles/JointDefenseCapabilitiesStudyFinalReport_January2004.pdf, last accessed January 2012.

PPBS process. It resulted in several changes to strategic planning and programming.

- *2006 Quadrennial Defense Review Integrated Product Team #3 Study:*¹⁰¹ As part of the 2006 *QDR*, a study team took a tabula rasa approach to DoD processes and offered a number of recommendations seen as too bold by many but reappeared in several subsequent reform efforts.
- *Beyond Goldwater-Nichols Phase IV Governance Study:*¹⁰² Released in 2008, this study conducted by the Center for Strategic and International Studies investigated ways of improving decision making in DoD and provided several recommendations for future administrations.

C. Organizational Development and Theory

Military revolutions throughout history have been accompanied by organizational change of some magnitude. They may occur at the highest headquarters or a subordinate component or even at the operational level. Wherever change occurs, it is necessary to fully-leverage the emerging technologies and processes that drive transformation. This is because transformed technology or processes likely have limited applications unless they are incorporated into organizational structures that can accommodate them.

¹⁰¹ Christopher Lamb, “2006 Quadrennial Defense Review Integrated Product Team #3 Results,” unpublished draft Department of Defense briefing, 2005.

¹⁰² Kathleen Hicks, *Invigorating Defense Governance: A Beyond Goldwater-Nichols Phase IV Report* (Washington, D.C.: Center for Strategic and International Studies, May 2008). Available at <http://csis.org/publication/invigorating-defense-governance>, last accessed January 2012.

A major reason why military transformation has been the exception rather than the norm throughout the history of warfare is that innovations (technological or procedural) frequently occur outside of the traditional organization. To fully adopt such innovations often requires reforming the organizations that inhibited such innovation in the first place. This is clearly what Secretary Rumsfeld had envisioned with OFT and is also true of notable military transformations throughout history.¹⁰³

Given the historic interrelationship between military transformation and organizational change, research into the field must include discussion of the basics of organizational dynamics. Preliminary work for this study offers a broad survey by introducing relevant concepts from the literature. It addresses the basics of organizational culture and the dynamics of bureaucratic organizations. The following is an overview of the literature reviewed, organized by sub-field.

Organizations and Theory. Organizations are collections of individuals united for a common purpose. They are formalized through rules, conventions, and tradition and are aligned in some way to accomplish their primary tasks. Kenneth Arrow argues that the primary means by which organizations manipulate the market pricing system is by achieving collective action where the market forces fail to do so.¹⁰⁴ In the case of DoD, it provides for a common good (or *collective action*) by supplying national defense

¹⁰³ For example, the Navy Combat Information Center (CIC) was a World War II capability developed in the field (not by headquarters) that later required changes in organization and processes to promote the concept throughout the Navy. For more information see Thomas Hone, "From Concepts to Capabilities through Learning: The Case of Stiletto Today and the Case of the Combat Information Center (CIC) in World War II," unpublished working draft paper, April 2006.

¹⁰⁴ Kenneth Arrow, *The Limits of Organization* (New York: W.W. Norton & Company, 1974), 33.

that would not otherwise be provided for by private sector equivalents. This is because of the prohibitive capital cost of investment and the unapparent profit incentive.

There are several theoretical schools that shape the understanding of organizations and the nature of their existence. According to Charles Perrow, the leading schools include (but are not limited to): management ideology, human relations, neo-Weberian models, and the institutional school.¹⁰⁵ The management theory grew out of early research by Frederick Taylor, Chester and Barnard, and others and focused on efficiency analysis and the role of managing complex organizations. It centered on the structure that organizations put in place to accomplish their objectives. Growing out of this early work was the human relations model which instead emphasized the role of the individual and factors influencing their performance. This school includes leadership models (Fiedler, Dubin, others) and group relations models (MacGregor and Liker).

Breaking from the early tradition of organizational theory are the neo-Weberian models that largely examine the role of decision making and technology in organizational behavior. Early pioneers exploring the role of decision makers included James March and Herbert Simon who distinguished between rational leaders and the “intendedly rational” ones.¹⁰⁶

The final school of organizational theory addressed here is the institutional school. Its proponents look at the whole organization and treat it as a dynamic, living

¹⁰⁵ The schools of organizational theory were derived from Perrow, *Complex Organizations: A Critical Essay*.

¹⁰⁶ Those that are “intendedly rational” try to pursue rational ends but are hampered by organizational other factors. For more, see James G. March and Herbert A. Simon, *Organizations*, 2nd Edition (New York: Blackwell Publishers, 1993).

system. The institutional school recognizes the environment as a factor influencing organizational performance. An early example of this research includes Morris Janowitz's *The Professional Soldier* where he explicitly addresses the role of the environment and changes to it in influencing the behavior of the military.¹⁰⁷ Together these schools of thought constitute the bulk of organizational theory. Any serious treatment of military organizational change (in the context of transformation) should explicitly address one or more of these theories of how organizations function.

Organizational Culture and Learning. The behavior and effectiveness of organizations, military or civilian, involves much more than the theory and structure underlying their existence. Indeed, organizations each have their own distinct cultures that affect all of their actions, both internal and external. Broadly defined, an organization's culture can be thought of as the interaction of its people, their actions, and the organization's objectives. More formally, organizational culture has been defined by Edgar Schein as "a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think, and feel in relation to these problems."¹⁰⁸

There are several reasons why organizational culture is important to the study of military change. Clifford Geertz argued that an understanding of organizational culture is

¹⁰⁷ Morris Janowitz, *The Professional Soldier, a Social and Political Portrait* (Boulder, CO: Free Press, 1963).

¹⁰⁸ Edgar Schein, *Organizational Culture and Leadership, 2nd Edition* (San Francisco: Jossey-Bass Publishers, 1992), 12.

important because it provides context and a way to intelligibly describe events, behaviors, institutions, and processes. Ann Swidler has argued that culture is important because it has long been identified as primary factor in explaining innovation.¹⁰⁹ Elizabeth Kier applies Swidler's theory of culture in action to demonstrate that culture (not structures and functions) best explains military change.¹¹⁰ Kier concludes that a military's culture shapes its choice between offensive and defensive doctrines. Theo Farrell of King's College also argues that culture can be a major causal factor in explaining military innovation.¹¹¹ In its documents and public pronouncements, OFT generally supported many of these contentions about the importance of organizational culture (in both promoting and inhibiting change).

In its efforts to transform the military, DoD has acknowledged the need to consider organizational culture. In DoD's *Transformation Planning Guidance*, Secretary of Defense Donald Rumsfeld stated that:

We must transform not only our armed forces, but the department that serves them by encouraging a culture of creativity and prudent risk-taking... There will be no moment at which the department is "transformed." Rather, we are building a culture of continual transformation.¹¹²

¹⁰⁹ Ann Swidler, "Culture in Action: Symbols and Strategy," *American Sociological Review* 51 (April 1986): 279. See also Talcott Parsons, *The Structure of Social Action* (New York: Free Press, 1937). Swidler's theory builds upon Talcott Parsons' "voluntaristic theory of action" which contends that culture provides "value orientations" that guide individual decisions.

¹¹⁰ Elizabeth Kier, *Imagining War: French and British Military Doctrine Between the Wars* (Princeton, NJ: Princeton University Press, 1997). Her research draws insights from studying changes in British and French military doctrine during the World Wars.

¹¹¹ Theo G. Farrell and T. Terriff, *The Sources of Military Change: Culture, Politics, Technology* (Boulder, CO: Lynne Rienner, 2002), 7-8.

¹¹² *Transformation Planning Guidance*, 1.

More recently the acting director of OFT noted a large part of its missions is to “focus on those levers that get at organizational culture.”¹¹³

Missing from most of these accounts are clear descriptions of the components of organizational culture and how particular efforts may or may not be able to affect them. For our purposes, organizational culture includes three interrelated components: shared assumptions, mission and objectives, and adaptation.

An organizational culture may incrementally evolve as the result of various factors or it may learn and adapt to make *discontinuous* progress.¹¹⁴ Organizational learning is what is required to change or transform an organization. It is what DoD has in mind to transform the military when its officials state that “the emphasis begins to switch from training for things that we probably aren’t going to do in the future to educating people on how to think about the environment they find themselves in.”¹¹⁵ However, advocating and instituting productive training and educational regimes to change culture is the exception to the rule. More common in large organizations (including DoD) are bureaucratic actions that inhibit learning and make the organization slow to adapt to a changing environment.

¹¹³ David Gurney and Jeffrey Smotherman, “An Interview with Acting Director, DoD Office of Force Transformation, Terry Pudas,” *Joint Forces Quarterly*, Issue 43, Number 3, 3rd quarter 2006, 32.

¹¹⁴ Schein, *Organizational Culture and Leadership*, 2nd Edition, 95. Schein identifies four factors that cause the evolution of an organization’s culture: 1) external pressures, 2) internal potentials, 3) response to critical events, 4) unpredictable chance factors.

¹¹⁵ Gurney and Smotherman, “An Interview with Acting Director, DoD Office of Force Transformation, Terry Pudas,” 32. The statement is made by Terry Pudas, director, Office of Force Transformation. He is advocating changing the focus of military training so as to improve learning and change the organizational culture.

According to Chris Argyris, “organizational defensive routines” are more common in large organizations and are actions that stifle learning. Such a defensive routine is “any policy of action that inhibits individuals or groups and organizations from experiencing embarrassment or threat and at the same time prevents actors from identifying and reducing the causes of embarrassment.”¹¹⁶ Argyris calls these types of measures “anti-learning and overprotective.” Defensive routines present the identification of the problem by otherwise ignoring or circumventing it in the first place. Such defensive routines appear to play prominently into bureaucratic objections to change in DoD. In fact, it is widely observed that military culture, particularly at the senior-most levels can also inhibit change or innovation. Recognition of this led Secretary Rumsfeld to state that “the Army’s problems could be solved by lining up fifty of its generals in the Pentagon and gunning them down.”¹¹⁷ Argyris’s theory aids in the explanation of some bureaucratic phenomena addressed in this study.

Organizational Decision Making. The decision-making apparatus of an organization is as important as the organization’s culture or structure. Indeed, the structure or behavior of an organization becomes secondary if the decision-making structure supported does not yield decisions. This may be the result of the decision makers or the process that supports them. Regardless, any sort of change agenda or military transformation requires bold decision making. Transformation succeeds or fails

¹¹⁶ Chris Argyris, *Knowledge for Action: A Guide to Overcoming Barriers to Organizational Change* (San Francisco, CA: Jossey-Bass, 1993), 15.

¹¹⁷ Michael R. Gordon and Bernard E. Trainor, *Cobra II: The Inside Story of the Invasion and Occupation of Iraq* (New York: Pantheon Books, 2006), 8.

depending on the efficacy of the decision making. Therefore, military transformation as a field of study cannot be fully addressed without some attention to decision-making theory. The department has recognized this in recent years as it has increased emphasis on reforming decision-making apparatuses, as seen in the most recent *QDR*.¹¹⁸

Contemporary decision theory has consisted largely of critiques or variants of the rational model. As James Pfiffner observes, “Much of the decision-making literature after World War II focused on the limitations of the rational model.”¹¹⁹ These critiques made way for the study of other theories of decision making. The shift in emphasis also led to the emergence of new analytic techniques that used different methods for deconstructing problems and answering strategic questions.¹²⁰ These multiple theories of decision are particularly important aids for understanding strategic decision making in DoD. As Christopher Lamb points out, “prescriptions for improving senior leader decision making [in DoD] must accommodate rational, nonrational, and intuitive decision making, depending on when these types of decisions are likely to generate better outcomes.”¹²¹

The renewed interest in *intuitive* decision making (as recently popularized by Malcolm Gladwell) provides the intellectual opposite of the rational model; observers

¹¹⁸ See Christopher Lamb and Irving Lachow, “Reforming Pentagon Strategic Decisionmaking,” *Strategic Forum*, no. 221, July 2006.

¹¹⁹ James P. Pfiffner, “Presidential Decision Making: Rationality, Advisory Systems, and Personality,” *Presidential Studies Quarterly* 2 (June 2005): 217.

¹²⁰ See Paul Davis, Jonathan Kulick, and Michael Egner, *Implications of Modern Decision Science for Military Decision-Support Systems* (Santa Monica, CA: RAND Corporation, 2005).

¹²¹ Lamb and Lachow, “Reforming Pentagon Strategic Decisionmaking,” 2.

have called the dyadic *blink vs. think*.¹²² Some appreciation of the spectrum of decision theory from the rational actor to the intuitive decision maker is important to understanding how decision makers behave within their organizations. Two notable authors in this area are Graham Allison and John Steinbruner. Their work is surveyed in the preliminary field research.

The blink vs. think debate is secondary to the issue of military transformation. What is central to transformation is how senior decision-makers in the Pentagon and beyond arrive at key strategic decisions that either drive change or reinforce the status quo. The dominant paradigm impacts the processes and analysis that support the decisions. Perhaps more important to the study of transformation is an appreciation of prevailing decision theories introduced above and how they affect national security decision making.¹²³ Indeed, defense decision making must draw upon both the analytic (rational) and cognitive (intuitive) schools as Lamb argues:

In the 1970's, however, they introduced objective, empirical feedback into training exercises with the aid of new simulation technologies and after-action reports to improve learning and future battlespace decision making. The training revolution the 1970's was not an easy transformation, it was highly effective because it combined the value of objective analysis of courses action with the ultimate need for commanders to make intuitive assessments and decisions. There is no reason why the Pentagon cannot do the same thing and implement a Decision Support Cell that balances

¹²² Malcolm Gladwell, *Blink: The Power of Thinking without Thinking* (New York: Little, Brown, 2005). See also Michel Legault, *Think! Why Crucial Decisions Can't Be Made in the Blink of an Eye* (New York: Threshold Editions, 2006).

¹²³ See Louis Gawthrop, *Bureaucratic Behavior in the Executive Branch: An Analysis of Organizational Change* (New York: The Free Press, 1969), 230-238. Gawthrop details the emergence of PPBS and the challenge of using a rational approach to address inherently non-rational questions. Reconciling the two is a key challenge Gawthrop argues.

objective analysis and intuitive wisdom. The Soldiers, Sailors, Airmen, and Marines who fight the Nation's battles deserve nothing less.¹²⁴

Dynamics of Bureaucratic Organizations. Given the nature of the challenge of transforming the military and all of the bureaucratic actors involved—Department of Defense civilians, Military Services, other federal agencies—it is essential to identify the key characteristics of bureaucracies and the myriad of factors affecting their agendas. Recognizing the important role of bureaucracies (in either leading or slowing change), in a speech on September 10, 2001, Rumsfeld called on the Pentagon bureaucracy to adapt:

It [transformation] demands agility -- more than today's bureaucracy allows. And that means we must recognize another transformation: the revolution in management, technology and business practices...Business enterprises die if they fail to adapt, and the fact that they can fail and die is what provides the incentive to survive. But governments can't die, so we need to find other incentives for bureaucracy to adapt and improve.¹²⁵

“Bureaucracy in this country is neither as rational and predictable as [Max] Weber hoped nor as crushing and mechanistic as he feared,” writes James Q. Wilson in his contemporary classic, *Bureaucracy: What Government Agencies Do and Why They Do It*.¹²⁶ Wilson attributes the flexibility and adaptiveness of American bureaucracies to the “character and mores” of the American people which he argues compete with the bureaucratic tendency towards rules and structure. However, Rumsfeld would likely argue that the DoD bureaucracy is every bit as “crushing and mechanistic” as Weber

¹²⁴ Lamb and Lachow, “Reforming Pentagon Strategic Decisionmaking,” 8.

¹²⁵ Rumsfeld, “Bureaucracy to Battlefield.”

¹²⁶ Wilson, *Bureaucracy*, 337.

feared. Possible reasons for this are found by identifying some of the key elements of traditional bureaucracies.

In creating his bureaucratic model, Wilson outlines three layers of bureaucratic activity: operators, managers, and executives. Each layer consists of different activities and is affected by different forces. At the lowest level are the bureaucratic *operators* where norms, beliefs, and organizational culture are formed. These are the rank and file staffs (either civilian or military) that pursue their interests as defined by internal demands or external clients depending on the nature of the bureaucracy. The next level of a bureaucracy is the *managers*. These are the mid-level decision makers who oversee operations. Wilson argues that whether this management level is bureaucratized or professional has as significant impact on the organization.¹²⁷ The highest level of a bureaucracy is the *executive*. At this level, Wilson suggests actors are concerned largely with “turf” and the preservation of autonomy (or “freedom of action”). According to him, there are several different types of executives: advocates, decision makers, negotiators. Wilson also classifies the bureaucracies themselves into three categories: coping, production, and craft.¹²⁸ His classification of bureaucracies and their levels of activity is helpful in classifying activities in DOD and OFT.

¹²⁷ Wilson, *Bureaucracy*, 149. “Bureaucratized” refers to personnel policies that are heavily rule-based and routinized. “Professional” provides specific instruction on the personnel requirements but leaves decisions of management and promotion to the managers.

¹²⁸ Ibid., 200-201. Coping agencies are those that largely address external factors and have little tangible output (ex. State Department). Production agencies are those that produce specific output/service (ex. Postal Service). Craft agencies are those that provide particular skilled services (ex. Forest Service).

Wilson's explanation of innovation in bureaucracies describes the cultural domain of innovation and its principal cultural drivers. However, he stops short of providing an approach for how these cultural forces manifest themselves in the physical/conceptual domains resulting in change. The other major external factor impinging upon organizational change and innovation is the policy agenda that a bureaucracy must manage or to which it must adapt.

Agenda-Setting. Change agendas, such as military transformation, succeed or fail based in part on timing and how consistent their goals are with other things already planned. Understanding how agendas are set and the various factors influencing their development is important to evaluating the case of OFT and its successes and/or failures. Several theories attempt to describe the emergence of issues onto a political or bureaucratic agenda. Each theory provides a somewhat different characterization of the process. Some place emphasis on the stakeholders in the process while pluralists examine interests and view "groups as the bedrock of democratic activity."¹²⁹ John Kingdon's model instead describes how issues and decisions evolve from being part of policy streams to becoming an agenda item.

Kingdon's approach is a revised "garbage can model" first developed by Cohen, March and Olsen.¹³⁰ Cohen et al. provide a framework for understanding what they call "organized anarchies." They present four separate streams of activity that run through all

¹²⁹ Anne Schneider and Helen Ingram, *Policy Design for Democracy* (Lawrence, KS: University Press of Kansas, 1997), 17. Further explanation of the role of stakeholder's analysis in public policy appears in Randall Clemons and Mark McBeth, *Public Policy Praxis* (New Jersey: Prentice-Hall, Inc., 2001), 26-29.

¹³⁰ Michael Cohen, James March, and Johan Olsen, "A Garbage Can Model of Organizational Choice," *Administrative Science Quarterly* 17 (March 1972): 1-25.

decisions or organizations: problems, solutions, participants and choice opportunities.

Activity occurs in these various streams and is brought together by a choice opportunity

that serves as:

[A] Garbage can into which various kinds of problems and solutions are dumped by participants as they are generated. The mix of garbage in a single can depends on the mix of cans available, on the labels attached to the alternative cans, on what garbage is currently being produced, and on the speed with which the garbage is collected and removed from the scene.¹³¹

Kingdon's model builds upon the garbage can theory in several ways: it consolidates the four streams of activities into three; it provides more detail of the policy streams; and it includes a more thorough treatment of how an issue is elevated to an agenda item or even a decision.

D. Case Study Methodology

Case study method serves several purposes. Cases may be used to provide description of events, test existing theory, or generate new theory. The study of cases may include comparison and contrast of several cases or investigation of a single case. Although proper case selection is a major challenge, King, Keohane, and Verba and many others contend that case studies utilizing multiple cases are methodologically sound.¹³² Multiple cases are frequently preferred over single case studies due to the supposed limitation of single case studies in drawing inferences and demonstrating causal

¹³¹ Cohen et al., "A Garbage Can Model of Organizational Choice," 2.

¹³² For example, see King, Keohane, and Verba, *Designing Social Inquiry*.

relations.¹³³ However, means for overcoming these perceived limitations of single case studies exist.

As Mary Kennedy and others have argued, the inferential power of single case studies can be strengthened when several criteria are met:¹³⁴

- Cases present a wide range of attributes for analysis;
- Many similar attributes between single case and population of interest;
- Few unique attributes in the case, and;
- Attributes under investigation are relevant to other cases.

Techniques for demonstrating causality in single case studies also exist.

Alexander George and Andrew Bennett argue that one way of doing this is by conducting *process-tracing*.¹³⁵ They describe the process as one that attempts to identify the intervening causal processes between the independent variable and the outcome. George and Bennett identify four varieties of process-tracing: (1) detailed (often atheoretical) narrative, (2) use of hypotheses, (3) analytical explanation, or (4) general explanation.¹³⁶ Done properly, process-tracing (or similarly rigorous methods) can present persuasive causal explanations.¹³⁷

¹³³ See Mary Kennedy, "Generalizing from Single Case Studies," *Evaluation Quarterly* 4 (1979): 661-668.

¹³⁴ Ibid.

¹³⁵ George and Bennett, *Case Studies and Theory Development in the Social Sciences*, 206-207.

¹³⁶ Ibid., 210.

¹³⁷ James Mahoney and Dietrich Rueschemeyer, eds., *Comparative Historical Analysis in the Social Sciences* (New York: Cambridge University Press, 2003), 318.

George and Bennett identify six types of case studies that may be employed: atheoretical/configurative idiographic, disciplined configurative, heuristic, theory testing, plausibility probes, building block studies.¹³⁸

This study is based upon the heuristic case study type. A heuristic case study examines a single case (or small number of cases using a single unit) to develop theoretical foundations and insights. Heuristic case studies are frequently used as the basis for follow-on studies (that apply the heuristic) but don't have to be part of a larger research agenda. In addition, they draw upon existing literature but are not required to identify and test formal theory. While heuristic case studies are subject to the same criticism that other single case study methods are subject to, they do permit intensive analysis into a single case instead of being limited by a narrow set of variables that formal theory might dictate.¹³⁹

E. Summary

This study examines whether the Office of Force Transformation was successful at advancing key initiatives along with some of the underlying factors that may have affected their pursuit of a change agenda. Since no existing literature addresses this particular topic, background into it requires knowledge of several complementary fields: revolution of military affairs, defense resource management, organizational dynamics, and case study methodology.

¹³⁸ George and Bennett, *Case Studies and Theory Development*, 75-76. These separate types of cases are not necessarily mutually exclusive and may be employed in conjunction.

¹³⁹ Eckstein, *Regarding Politics*, 145.

The literature—Krepinevich, Murray, and others—contends that military transformation results from the combination of innovation in capabilities, organizations, and concepts and that fully leveraging the change requires simultaneous change in all three. In addition, although change from outside is routinely resisted in bureaucracies, Came and Campbell show that promise lies in the promotion of change agendas from within. Furthermore, since these scholars and others express the need for control over resources to affect change, a review of the literature on DoD resource planning activities is addressed.

Recognizing that the office operated in a larger organizational context, literature (Schein, Swidler, Kier, etc.) on organizational dynamics is reviewed and reveals that organizational culture plays an important role, especially in advancing military change agendas. Furthermore, the decision environment that the new office was to support must be considered in judging their propensity to affect senior leader decisions. Finally, case study methodology literature helps to frame the study methodology described in the preceding chapter and provided a basis for constructing the study and strengthening its findings.

CHAPTER FOUR: THE DEPARTMENT OF DEFENSE OFFICE OF FORCE TRANSFORMATION

Transformation has intellectual, social and technological dimensions. Fundamental changes in the conceptualization of war as well as in organizational culture and behavior are usually required to bring it about. During the early phase of transformation, only a small portion of the force is typically transformed. However, small transformed forces with a critical mass of spearhead capabilities can produce disproportionate strategic effects. Because transformation is highly path-dependent, choices made today may constrain or enhance options tomorrow.¹⁴⁰

Department of Defense, 2001
Quadrennial Defense Review Report

Early in the Bush administration, there was general recognition of what military transformation required—sweeping change throughout the entire organization that would begin with a subset of the military to be transformed. This notion of creating a *vanguard* force of transformed capabilities and also investing to create future options (for broader transformation) were key elements of the vision for transformation that coalesced with the release of the 2001 *Quadrennial Defense Review* (QDR).

This chapter describes the antecedents that eventually gave rise to the transformation guidance in the *QDR*. It continues with a discussion of the structure of the Office of Force Transformation, its goals, and leading initiatives. The eventual

¹⁴⁰ *Quadrennial Defense Review Report* (2001), 29.

disestablishment of the office is examined along with the factors that led to it. The chapter concludes with a summary of the key actors that provided the context for OFT's execution of its strategy for transforming the department.

A. Early Foundations of Transformation

Although no organizational precedent for the Office of Force Transformation exists in DoD, the concept of transformation had an intellectual foundation in the department, under differing conceptions and terminology. Indeed, driven in part by external forces along with internal advocates for change, military innovation became a widely studied and increasingly promoted concept first as the revolution in military affairs and later as military transformation.

The American Revolution in Military Affairs

Transformation's early beginnings date back to the Cold War conception of the Soviet "military-technical revolution" where advances in the military were thought to be driven largely by technology. A similar concept began to take shape in the United States in the early 1990's under the rubric of a revolution in military affairs. This characterization of military innovation and its components was broader than the original Soviet concept that motivated it. The American RMA considered technology an essential element of military innovation that also included dramatic changes in doctrine and organization to achieve it. The genesis of RMA can be traced back to the 1990's and to the DoD Office of Net Assessment under the directorship of Andrew Marshall and the

intellectual leadership of Andrew Krepinevich, one of Marshall's senior analysts.¹⁴¹

Together, their efforts inspired subsequent conceptualizations of military innovation.

The National Defense Panel

While early thinking about the RMA laid the intellectual foundation for transformation, it was the 1997 National Defense Panel (NDP) that crystalized the concept of transforming the force and brought together the political and bureaucratic forces necessary to advance it.¹⁴² Chartered by the 1997 National Defense Authorization Act, the NDP was a congressionally-mandated review of the 1996 *QDR*, chaired by Phil Odeen and four civilians including Richard Armitage and Andrew Krepinevich. It introduced the concept of transformation and, instead of modernizing the force, “skipping” a generation of weapons.¹⁴³

The panel's charter was to conduct an assessment of the *QDR* and an alternative force structure assessment. While the panel had some notable detractors, it was hailed by others as planting the seed of transformation by key participants who would eventually help to shape the concept during the George W. Bush candidacy for president.¹⁴⁴ Major

¹⁴¹ The term RMA can be traced back to Andrew Marshall, “Some Thoughts on Military Revolutions—Second Version,” memorandum for the record, August 23, 1993. The Soviet military-technical revolution that motivated is often credited to Marshall Nikolai Ogarkov, *Vsegda v Gotovnosti k Zashite Otechestva* (*Always in Readiness to Defend the Homeland*) (Moscow: Voenizdat, 1982).

¹⁴² National Defense Panel, *Transforming Defense: National Security in the 21st Century* (Washington, D.C.: Department of Defense, 1997).

¹⁴³ Dale Herspring, *Rumsfeld's Wars: The Arrogance of Power* (Lawrence, KS: The University Press of Kansas, 2008), 25.

¹⁴⁴ Senator John McCain along with others criticized the NDP for not being specific enough about future plans, see David Isenberg, “The Quadrennial Defense Review: Reiterating the Tired Status Quo,” *Policy Analysis*, No. 317, September 17, 1998. According to interviews, however, several notable defense thinkers interviewed from January 2012 – February 2013 attribute the NDP for being the beginning of the transformation agenda under the Bush Administration.

congressional drivers of the panel and promoters of its eventual findings were the “new elite” that had emerged on the Hill as strong proponents of changing the military—Senators Joseph Lieberman and Daniel Coates, and Representative Mac Thornberry.¹⁴⁵

Transformation within the Military Services

In addition to advancing the concept of transformation, the Military Services inside DoD were actively pursuing initiatives that would lay the foundation for their transformation, even though the department had not yet adopted the term itself.¹⁴⁶ A complete listing of all such efforts is beyond the scope of this research but one notable example is the Army’s Force XXI initiative.¹⁴⁷ Beginning in the early 1990’s, the Army’s Training and Doctrine Command was examining concepts that would permit it to more rapidly deploy around the world, using dispersed forces that were lighter and relied more on intelligence and networked information to defeat the adversary.¹⁴⁸ The adversary was characterized by capabilities, not geography, and the Army wanted to be prepared for adversaries with certain capabilities, wherever they may emerge. These basic principles—demassification, dispersion, networking, information, and capabilities—later became watchwords of transformation under Secretary Rumsfeld. The Army codified this vision in its 1994 pamphlet *Force XXI: A Concept for the Evolution of Full-Dimensional*

¹⁴⁵ Duane Robert Worley, *Shaping U.S. Military Forces: Revolution or Relevance in a Post-Cold War World* (Westport, Connecticut: Greenwood Publishers Group, 2006), 50.

¹⁴⁶ Bob Woodward, *State of Denial: Bush at War, Part III* (New York: Simon and Schuster, 2006), 59.

¹⁴⁷ Indeed, similar examples could likely be found in the Air Force, Navy and Marines as well and this example is not to ignore innovative efforts undertaken by them, but such a survey is too lengthy to include here.

¹⁴⁸ See Global Security.Org, “Force XXI,” available at <http://www.globalsecurity.org/military/agency/army/force-xxi.htm>, last accessed January 2012.

Operations for the Strategic Army of the Early Twenty-First Century, almost 10 years before Rumsfeld launched his transformation campaign with the creation of OFT.¹⁴⁹ This new concept was the result of combined experimentation, concept development, and lessons learned from ongoing operations and shaped a generation of Army leaders and decisions they would make through the early 2000's.¹⁵⁰

As mentioned, the Army and other Services have similar examples of transforming before the term was introduced by Bush and Rumsfeld.¹⁵¹ However, many of these earlier initiatives were not perceived by political leadership as transformational as they may have been and were instead pejoratively cast as *legacy* (or old) concepts of yesteryear. Defense of some of these programs proved a liability for service leadership and even cost some (such as Army Chief of Staff Eric Shinseki) their positions.¹⁵² In fact, Rumsfeld was widely known to appoint only military leadership that embraced his brand of military transformation.¹⁵³

¹⁴⁹ United States Army, *Force XXI Operations: A Concept for the Evolution of Full-Dimensional Operations for the Strategic Army of the Early Twenty-First Century*, Training and Doctrine Command, Fort Monroe, Virginia, August 1, 1994. Available at <http://www.dtic.mil/cgi-bin/GetTRDoc?AD=ADA314276>.

¹⁵⁰ "Force XXI."

¹⁵¹ Mark G. Czelusta, "Business as Usual: An Assessment of Donald Rumsfeld's Transformation Vision and Transformation's Prospects for the Future," *George C. Marshall European Center for Security Studies Occasional Paper*, No. 18, June 2008, 38. One Air Force indicated that "much of what [OFT] deemed 'transformation' were programs that were started before they got there."

¹⁵² See Quentin Hodgson, *Deciding What to Buy: Civil-Military Relations and Major Weapons Programs* (Carlisle, PA: U.S. Army War College, 2010), 64-68.

¹⁵³ Woodward, *State of Denial*, 8.

B. Transformation Takes Shape

These early conceptual and political foundations resulted in the notion of transformation gaining some momentum both inside and outside of the defense establishment. The highest profile of the emerging proponents of military transformation was then presidential candidate, George W. Bush. In several public pronouncements, Bush articulated transformation as the centerpiece of his defense policy. First, in his September 23, 1999 speech at the Citadel, Bush proclaimed that:

As President, I will begin an immediate, comprehensive review of our military – the structure of its forces, the state of its strategy, the priorities of its procurement – conducted by a leadership team under the Secretary of Defense. I will give the Secretary a broad mandate – to challenge the status quo and envision a new architecture of American defense for decades to come. We will modernize some existing weapons and equipment, necessary for current tasks. But our relative peace allows us to do this selectively. The real goal is to move beyond marginal improvements – to replace existing programs with new technologies and strategies. To use this window of opportunity to skip a generation of technology... I am under no illusions. I know that transforming our military is a massive undertaking.¹⁵⁴

Bush's embrace of changing the U.S. military didn't end with his campaign promises. It continued into his presidency as he took every opportunity to speak of reforming the military when defense policy was the subject of the speech. At the commencement of the Naval Academy class of 2001, Bush continued his transformation mantra when he stated that:

¹⁵⁴ George W. Bush, "A Period of Consequences" (speech delivered at The Citadel, South Carolina, September 27, 1999). Available at http://www3.citadel.edu/pao/addresses/pres_bush.html, last accessed August 2011.

We must build forces that draw upon the revolutionary advances in the technology of war that will allow us to keep the peace by redefining war on our terms. I'm committed to building a future force that is defined less by size and more by mobility and swiftness, one that is easier to deploy and sustain, one that relies more heavily on stealth, precision weaponry and information technologies.¹⁵⁵

Despite these public pronouncements about transformation, observers pointed out that the President's many statements lacked the specifics required to implement it. For example, one of the provisions of the Citadel speech was that twenty percent of the Pentagon budget would be assigned to advanced technology programs, to be spent by the Secretary of Defense, not the Military Services that traditionally develop and procure technologies. Evidently such claims were made seemingly arbitrarily by those surrounding Bush, such as John Hillen, one of the authors of the speech.¹⁵⁶ Even once Bush took office, those in the Administration questioned whether the vision for transformation was supported by any details. Rumsfeld's Deputy Assistant Secretary of Defense for Strategy, Andy Hoehn stated that "there was not a specific agenda on what transformation really meant beyond that [the Citadel speech]."¹⁵⁷

As demonstrated, the concept of transforming the military dates back to the early 1990's but the chief architects of Bush's vision of it were the authors of the original 1999 Citadel speech. These authors included Senator Daniel Coates and former Assistant

¹⁵⁵ George W. Bush, "Class of 2001 Naval Academy Commencement" (speech delivered at the U.S. Naval Academy, Annapolis, MD, May 25, 2001). Available at http://www.ideasinactiontv.com/tcs_daily/2001/05/class-of-2001-naval-academy-commencement.html, last accessed August 2011.

¹⁵⁶ Bradley Graham, *By His Own Rules: The Ambitions, Successes, and Ultimate Failures of Donald Rumsfeld* (New York: Public Affairs, 2009), 208.

¹⁵⁷ *Ibid.*, 208.

Secretary of Defense Richard Armitage. Armitage, in particular, was present during meetings in February 1999 amongst key Bush advisors where then candidate Bush stated that he wanted to make defense policy a major issue and transformation of the military the centerpiece of it.¹⁵⁸ In fact, most accounts suggest that the combination of Armitage and Coates were to head the Defense Department under the Bush administration and implement the change agenda they had shaped.¹⁵⁹ However, at last minute, former congressman and Secretary of Defense Donald Rumsfeld was tapped to again take the post (having previously served as Secretary of Defense under President Ford).

Early Efforts to Transform Under Bush

Even though Rumsfeld did not develop Bush's transformation agenda nor was he expected by many to be the executor of the vision laid out in the Citadel speech, Rumsfeld was certainly was no newcomer to the defense department or the need for advanced technology and concepts. In fact, prior to his appointment as defense Secretary, Rumsfeld had chaired two high-profile panels exploring the need for advanced capabilities—the Commission to Assess the Ballistic Missile Threat to the United States (1998) and the U.S. Commission to Assess National Security Space Management and Organization (2000).

¹⁵⁸ Woodward, *State of Denial*, 8.

¹⁵⁹ Worley, *Shaping U.S. Military Forces*, 49. See also, Tait Simpson, "Center for Strategic and Budgetary Assessments: One Think Tank's influence on the Movement to Transform the United States Military" (Master's Thesis, University of British Columbia, August 2005): 73-74. Available at https://circle.ubc.ca/bitstream/handle/2429/16719/ubc_2005-0639.pdf?sequence=1, last accessed August 2011.

Early in his second tour as Secretary of Defense, Rumsfeld sought to put his mark on the strategy for transformation that he inherited. During senate testimony in June 2001, Rumsfeld discussed the need to reform the military to better address future challenges, wherever they may come from. He testified that it wasn't necessary to transform the entire military, rather "Preparing for the 21st century will not require immediately transforming the entire U.S. military—just a portion...in some instances, transformation may not require new capabilities at all, but rather new ways of arranging, connecting and using existing capabilities."¹⁶⁰

However, these pronouncements alone proved insufficient in advancing the agenda within the department. Observers argued that Rumsfeld hadn't been able to develop an approach for implementing the President's vision, and some noted that Rumsfeld seemed to be "casting around, trying to grab some ideas."¹⁶¹ Even though Rumsfeld publically courted the director of the department's Office of Net Assessment, Andrew Marshall, asking him to lead several review panels, there were signs that transformation had "sputtered" and wasn't getting the support it needed.¹⁶² Indeed, the combination of Rumsfeld without an apparent implementation strategy and the lack of a "burning platform" or strategic impetus for change slowed reform of the department.¹⁶³

¹⁶⁰ Donald Rumsfeld, Statement before the Senate Armed Services Committee, June 21, 2001.

¹⁶¹ Graham, *By His Own Rules*, 209. The statement was from Paul Gebhard, former assistant chief of staff to Secretary of Defense William Cohen who stayed on to serve Rumsfeld for several months.

¹⁶² Worley, *Shaping U.S. Military Forces*, 49.

¹⁶³ The lack of a "burning platform" or compelling case for changing "the world's best military" were cited by several senior defense officials and leading thinkers interviewed as major reasons for Rumsfeld's early struggles.

One area where the Secretary did convey clear direction and intent was on the topic of organizational change—transforming the bureaucracy he had seen grow significantly since his first Pentagon tour. Rumsfeld did this through regular public pronouncements on the need to reform the organization and the processes manifest throughout it. Nowhere was this made clearer than in his town hall address to the Pentagon staff on September 10, 2011 when he stated that:

[O]ur foes are more subtle and implacable today. You may think I'm describing one of the last decrepit dictators of the world. But their day, too, is almost past, and they cannot match the strength and size of this adversary. The adversary is closer to home. It's the Pentagon bureaucracy. Not the people, but the processes. Not the civilians, but the systems. Not the men and women in uniform, but the uniformity of thought and action that we too often impose on them.¹⁶⁴

Even though the concept was ill defined, a significant way in which Rumsfeld sought to transform the bureaucracy was to change major processes. He promoted a procedural shift away from its *threat-based* orientation that focused on specific adversaries to *capabilities-based* approaches for addressing a wide range of adversary capabilities, wherever they may be confronted.¹⁶⁵ This resulted in a new orientation of several major DoD processes, while many others were left unchanged.

Despite emphasizing organizational and bureaucratic change, Rumsfeld's transformation agenda struggled; lacking the support and clarion call required for making progress in reforming the department. Much of this was due to the lack of the

¹⁶⁴ Rumsfeld, "Bureaucracy to Battlefield."

¹⁶⁵ See Kagan, *Finding the Target*, 280; Michael Fitzsimmons "The Problem of Uncertainty in Strategic Planning," *Survival: Global Politics and Strategy* 6 (2006); Jason Dechant, "Move U.S. Strategy Beyond Uncertainty," *Defense News*, May 1, 2006, 37.

aforementioned burning platform which would have drawn the support of DoD leadership, many of whom still questioned the need for overhauling arguably the world's best military. However, much of this changed September 11, 2001 with the terrorist attacks on the World Trade Center and the Pentagon. These tragic events brought to the fore the fact that the U.S. was still threatened by state and non-state actors around the world who stood ideologically opposed to it. The national security establishment immediately turned to assessing the capabilities required to contend with such adversaries. The events of September 11 gave Rumsfeld and the administration the opportunity to "reassess the importance and role of transformation."¹⁶⁶ Not only did the events appear to reinvigorate the transformation agenda but Rumsfeld viewed the military operations in Iraq and Afghanistan that followed as opportunities to advance it.¹⁶⁷ Indeed, "the Iraq war plan was the chessboard on which Rumsfeld would test, develop, expand and modify his ideas about military transformation."¹⁶⁸

If September 11, 2001 gave the department new focus in its pursuit of transformation, than it was the 2001 *Quadrennial Defense Review* published just a few weeks afterwards that documented and formalized its approach. The review, a congressionally-mandated comprehensive evaluation of defense strategy and the means for implementing it, is conducted every four years and is considered to be a major tool for

¹⁶⁶ Kagan, *Finding the Target*, 307.

¹⁶⁷ Graham, *By His Own Rules*, 670-671.

¹⁶⁸ Woodward, *State of Denial*, 81.

the Secretary of Defense to implement his agenda.¹⁶⁹ The 2001 installment was in its final draft form when terrorists attacked the World Trade Center and the Pentagon, thus forcing the department to revisit the text of the *QDR*, and recast it in light of the new security challenges that became a reality. The final *QDR* states that, “U.S. defense strategy must take into account the need to transform U.S. forces to address several key emerging operational challenges that are inherent in current security trends.”¹⁷⁰ The department was going to address these challenges and transform by pursuing six operational goals:¹⁷¹

- Protecting critical bases of operations (U.S. homeland, forces abroad, allies, and friends) and defeating CBRNE weapons and their means of delivery;
- Assuring information systems in the face of attack and conducting effective information operations;
- Projecting and sustaining U.S. forces in distant anti-access or area-denial environments and defeating anti-access and area denial threats;
- Denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike, through a combination of complementary air and ground capabilities, against critical mobile and fixed targets at various ranges and in all weather and terrains;

¹⁶⁹ John Gordon, “The Quadrennial Defense Review: Analyzing the Major Review Process” (PhD Dissertation, George Mason University, 2005).

¹⁷⁰ *Quadrennial Defense Review Report* (2001), 7.

¹⁷¹ *Ibid.*, 30.

- Enhancing the capability and survivability of space systems and supporting infrastructure; and,
- Leveraging information technology and innovative concepts to develop an interoperable, joint Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) architecture and capability that include a tailorable joint operational picture.

The means by which the department was going to pursue these goals was through a concerted, department-wide effort that would be promoted in large part by a new office charged with transforming the office. In creating the Office of Force Transformation, the *QDR* directed that:

To support the transformation effort, and to foster innovation and experimentation, the department will establish a new office reporting directly to the Secretary and the Deputy Secretary of Defense. The Director, Force Transformation will evaluate the transformation efforts of the Military Departments and promote synergy by recommending steps to integrate ongoing transformation activities.¹⁷²

Although there were a number of new initiatives introduced by the 2001 *QDR*, the Office of Force Transformation was the only new organization created. The transformation agenda was the central focus of the review and the establishment of OFT was the document's "greatest accomplishment."¹⁷³

¹⁷² Ibid., 29.

¹⁷³ See Herspring, *Rumsfeld's Wars*, 42 and Kagan, *Finding the Target*, 285. The *QDR* was not without its detractors though as some considered it "disappointing" (Amy Svitak, "Rumsfeld at Two Years," *Defense News*, December 16, 2002, 1).

C. Catalyzing Change: Establishing the Office of Force Transformation

The motivations for creating an office to promote transformation came from multiple sources. One proponent of establishing organizations within the department to advance leading initiatives was Congress. Indeed, in the years prior to establishment of OFT, Congress had advocated the establishment of a Joint Forces Command (formerly Atlantic Command) to help implement jointness across the Services and conduct joint concept development and experimentation. Even before the 2001 *QDR* was released, the Fiscal Year 2002 National Defense Authorization Act recommended that the department establish an independent office to promote transformation. The act stated that “It is the sense of Congress that the Secretary of Defense should consider the establishment of an Office of Transformation within the Office of the Secretary of Defense.”¹⁷⁴

The Office of Force Transformation Takes Shape

Once the decision to establish an independent office was made by Rumsfeld, the next step was to recruit its director. The head of the new office had to be a combination of a manager, leader, and innovator—somebody who could oversee the new organization, provide a vision for the community, and had access to the Secretary of Defense. Shortly after the release of the 2001 *QDR*, Rumsfeld tapped for the post recently retired navy vice admiral Arthur Cebrowski, fresh off his final military tour where he served as president of the U.S. Naval War College. Cebrowski was a naval aviator, having served in the navy since 1964. With degrees in computer science, multiple combat tours, directorship of the

¹⁷⁴ House Resolution 2586, *National Defense Authorization Act for Fiscal Year 2002*, September 4, 2001, Section 902(b), 344-345.

command, control, communications, and computers directorate of the Joint Staff (J6), and visionary thinking on the topic of “network-centric warfare,” Cebrowski was seen by many as a natural fit for the position even though he had never worked with Secretary Rumsfeld. Indeed, for that reason, Cebrowski even claimed to be “surprised” when Rumsfeld approached him for the position.¹⁷⁵ Most observers were not surprised though as Cebrowski was considered the father of a new theory of warfare—network-centric warfare (NCW)—and a “driving force” for change in the department.¹⁷⁶ He outlined his vision for transforming the department in his appointment speech in November 2001 when he stated that transformation “are those continuing processes and activities which create new sources of power and yield profound increases in military competitive advantage as a result of new, or the discovery of, fundamental shifts in the basic underlying rule sets.”¹⁷⁷

Once the office’s director was selected, the next task at hand was giving shape to the office and the structure of the new organization. OFT would become a mix of military and civilian staff supplemented by support contractors. Many of the civilians were staff that Cebrowski had known over the years from prior positions. The military officers were on joint tours, some there to find out (for their Service) what OFT was interested in and

¹⁷⁵ Blaker, *Transforming Military Force*, 5. See also Michael Evans, “Vice Admiral Arthur Karl Cebrowski (1942-2005): Pioneer of the Theory of Network-Centric Warfare,” *Australian Army Journal* 1 (Summer 2005): 295.

¹⁷⁶ Arnaud de Borchgrave, “21st Century’s Clausewitz,” *United Press International*, January 18, 2006, available at <http://www.middleeast.org/launch/redirect.cgi?num=472&a=50>, last accessed August 2011.

¹⁷⁷ Arthur Cebrowski, “Special Briefing on Transformation,” (remarks at a DoD press conference, November 27, 2001). Available at http://www.au.af.mil/au/awc/awcgate/transformation/t11272001_t1127ceb.htm, last accessed August 2011.

the direction it was going.¹⁷⁸ Numbering between 25-35 staff over the years, the office was functionally organized around its “principal sections” (see Figure 2) and led by three assistant directors.¹⁷⁹ The assistant directors’ portfolios shifted slightly over the years, depending on the definition of principal sections, but they were generally organized as follows: one assistant director was responsible for science and technology programs, another for strategy, risk management, and experimentation, and the third was responsible for concepts and operations. The organizational structure was rather common for DoD offices its size but one interesting feature of OFT was the presence of an outreach function responsible for facilitating the many speaking engagements of the office and also reaching out to Capitol Hill in the form of occasional seminars and meetings with key members of Congress and their staffs.

¹⁷⁸ This is based upon comments made by several respondents the author interviewed from January 2012 – February 2013. The respondents were both staff and senior members of OFT from 2002-2006.

¹⁷⁹ Department of Defense, *Office of Force Transformation FY2005-2006 Strategic Plan* (Washington, D.C.: Department of Defense, 2005), 13.

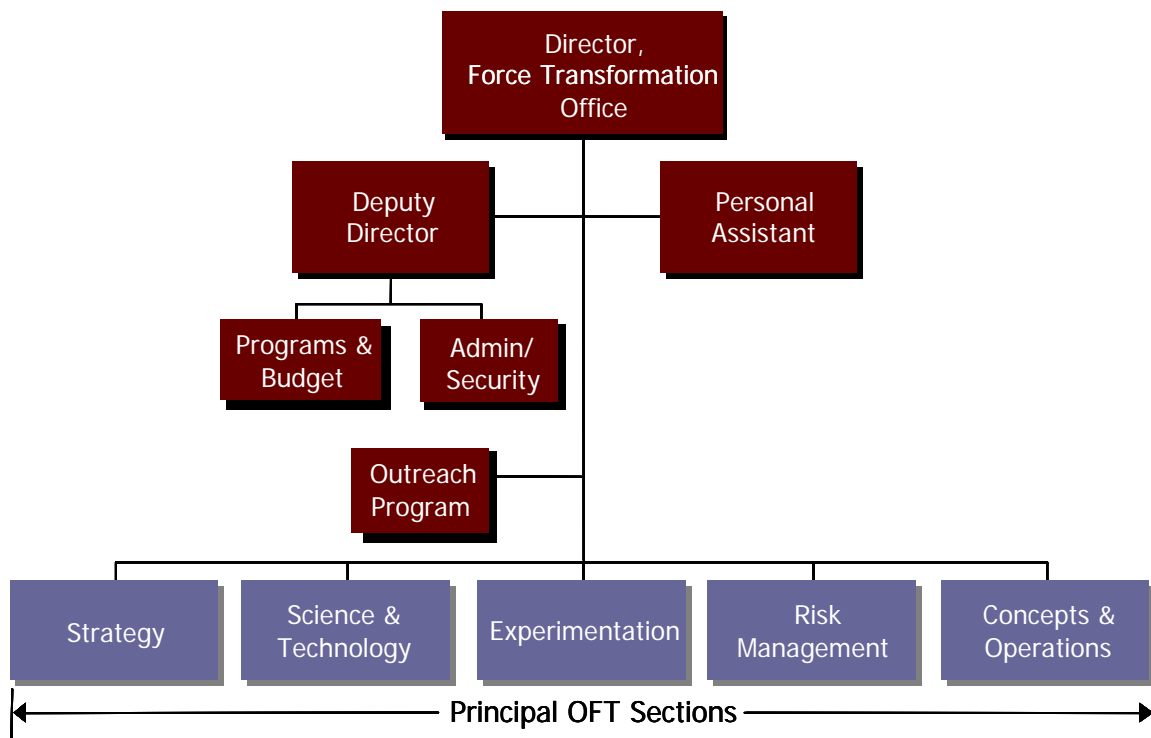


Figure 2: Office of Force Transformation Organizational Structure

After the director was selected and an organizational construct was established, the third foundational element of the office was resourcing it. Although Admiral Cebrowski originally suggested to Rumsfeld that it be funded at approximately \$20 million annually, OFT received about half of that in its first fiscal year (FY)—FY2002, which began in October 2001.¹⁸⁰ This amount crept to a high of \$20 million in 2005, most of which was dedicated to research and development. This reflected DoD’s funding of the office but selected OFT programs received additional funding directly from Congress. This additional funding essentially doubled the funding of the office and its

¹⁸⁰ A.K. Cebrowski, “Letter to the Secretary of Defense,” undated (estimated Summer 2001).

programs.¹⁸¹ Once funding was in place for the office, the final step was providing it with the authority necessary to influence other DoD components.

New Authorities Put to the Test

The original mandate for OFT appears in a variety of sources, some official others unofficial. Taken together, these sources address what the office was chartered to accomplish. Drawing upon them, OFT was broadly mandated to assist the Secretary of Defense in the development of DoD's force transformation strategies. How this was to be accomplished and the authorities granted to the office to do so varied, depending on the source.

One source providing insight into the office's mandate are the internal memoranda on the establishment of the office that were used by OFT's leadership team during initial correspondence with Rumsfeld. These memoranda not only reveal perspective on the original intent of the office but also that it was conceived of earlier in 2001, prior to both the attacks of September 11 and the direction of OFT's establishment in the 2001 *QDR*.¹⁸² These memoranda and concept papers provided early indication of how the office was to be structured and its original charter. Specifically, the architects of the office saw its focus as being development of "operational prototypes" and

¹⁸¹ The specific amount of programmatic funding will be addressed in subsequent chapters discussing each of them.

¹⁸² A.K. Cebrowski, "Draft Letter to the Secretary of Defense," July 17, 2001. The letter outlines plans for the establishment of the office and refers to a meeting with the Secretary and another meeting forthcoming that week with the Secretary and his leadership team.

experimentation and wargaming with advanced concepts.¹⁸³ Additionally, they impressed upon the Secretary the need for adequate resourcing and stated the importance of direct access to the Secretary and his senior most leadership team.

Another source of OFT's original mandate is the Secretary of Defense himself and the instruction he provided OFT upon its establishment. According to one senior OSD official who was very involved with the establishment of OFT, Secretary Rumsfeld provided little direction to its director other than "do something to improve U.S. space capabilities."¹⁸⁴ This afforded the new office some latitude and also reflected the Secretary's prior experience with the Space Commission and his commitment to extending U.S. advantages in that domain. It also helps to explain the office's aggressive pursuit of one of its flagship initiatives—Operationally Responsive Space.

The third, and potentially most authoritative source of direction for OFT was the Department of Defense Directive (DODD) formalizing its establishment. Normally, a new office in OSD derives its authorities from such a document. Therefore, a DODD was drafted and coordinated throughout the larger department—a requirement for such directives. The directive granted the Director, Office of Force Transformation the basic authorities and responsibilities he was already thought by others to hold and consistent

¹⁸³ "Concept of Operations for the Office of Force Transformation," DoD memorandum, unspecified author, Spring 2001. The presumed author of the memo was either Admiral Cebrowski or his eventual Deputy Director, Terry Pudas both of whom were primarily responsible for developing the concept for the new office and its operation.

¹⁸⁴ According to an author interview with a former senior OSD official on March 15, 2012.

with direction the office received from the Secretary. Some of these authorities and responsibilities included:¹⁸⁵

- Advise and assist the Secretary of Defense in the development of force transformation strategies;
- Coordinate and collaborate with all relevant offices on matters pertaining to implementing force structure transformation;
- Select and budget for prototypes for advanced operational experimentation; and,
- Report directly to the Secretary and Deputy Secretary of Defense.

Despite efforts to put the directive in place, it received “non-concurrence” responses from key offices within the department and was thus never submitted to the Secretary for final signature. The refusal of some coordinating offices to concur with the directive reflected the bureaucratic equities at stake with the creation of the new office and was an initial and lasting blow to the bureaucratic standing of OFT in DoD.¹⁸⁶

A final source of official direction for the office was the department’s *Transformation Planning Guidance* (TPG).¹⁸⁷ The document, published only once in April 2003, was intended to direct DoD and its components on transformation and align

¹⁸⁵ “Director, Force Transformation,” Department of Defense Directive, undated coordination draft (estimated Fall/Winter 2001). Although the directive was never signed, OFT routinely used the charter language in presentations it gave throughout the community.

¹⁸⁶ According to several author interviews of senior personnel from both inside and outside of OFT conducted from April-July 2012.

¹⁸⁷ *Transformation Planning Guidance*.

the various parts of the enterprise in pursuit of the 2001 *QDR*'s transformation goals. It did so by clearly outlining various transformational activities (such as joint experimentation, transformation roadmap development, etc.) and assigning roles and responsibilities and tying the various activities to key DoD decision processes. The *TPG* defined transformation, outlined its scope, and presented a strategy for its pursuit. The department's strategy for transforming involved transforming (1) culture, (2) processes, and (3) military capabilities.¹⁸⁸ As part of the strategy, the guidance identified the key actors responsible for the implementation and they included the Secretary of the Defense, the Chairman of the Joint Chiefs of Staff, the Director of the Office of Force Transformation, the Commander of Joint Forces Command (and other Combatant Commands), and Military Service secretaries and chiefs. The *TPG* directed that the Director of OFT was to "monitor and evaluate implementation of the department's transformation strategy, advise the Secretary, and manage the transformation roadmap process."¹⁸⁹ The remainder of the Secretary's transformation guidance specified the roles and relationships between the key actors and gave OFT a central role in coordinating efforts and serving as the Secretary's principal advisor on how the department was achieving its transformation goals. The *TPG* attempted to firmly and formally establish the office's role in promoting transformation and provide it with clear authorities to do

¹⁸⁸ Ibid., 8-9.

¹⁸⁹ Ibid., 12.

so.¹⁹⁰ One of its major accomplishments was outlining the department's transformation strategy and assigning organizational roles and responsibilities for executing it.¹⁹¹

The first test of the new office and the mandate it was given, both *de jure* and *de facto*, was the development of an official DoD definition of the term transformation. Prior to the issuance of the *TPG* in 2003, DoD hadn't formally defined the term. Not even in Bush's campaign speeches was the term clearly defined; only general platitudes were offered describing transformation's attributes. This lack of clear definition of the term left much of the department unclear on what the President and the Secretary intended by it, let alone how to implement it.¹⁹² As Kagan notes, many simply defined the term as *change* lacking a better way to describe it.¹⁹³ However, defining the term and assisting the Secretary with developing consensus around it should have been the role of an Office of Force Transformation, but they were simply another participant in what devolved into a long, bureaucratic struggle "involving senior leaders sitting around a table debating the definition while Rumsfeld 'didn't care what the group came up with'."¹⁹⁴ The office's inability (or unwillingness) to exercise authority in this process to come to a consensus

¹⁹⁰ This is based upon the author's experience as one of the document's principal authors and party to most of the senior level discussions of the guidance.

¹⁹¹ This was one of the findings of the U.S. Government Accountability Office (GAO). See U.S. Government Accountability Office, "Military Transformation: Clear Leadership, Accountability, and Management Tools Are Needed to Enhance DoD's Ability to Transform Military Capabilities," GAO Report GAO-05-70, December 2004.

¹⁹² See Thomas G. Mahnken and James R. FitzSimonds, *The Limits of Transformation: Officer Attitudes Toward the Revolution in Military Affairs* (Newport, RI: Navy War College Press, 2003), 71-85.

¹⁹³ He wrote that "transformation is nothing more than change and there is no better way to define it," (Kagan, *Finding the Target*, 311-313). The opinion was also shared by one of the concepts key architects interviewed for this study, March 28, 2012.

¹⁹⁴ Graham, *By His Own Rules*, 324.

was an early indication of the limits of the organization in influencing others in the department.

These bureaucratic deliberations produced a definition of transformation that was non-threatening which all stakeholders could agree to: “A process that shapes the changing nature of military competition through new combinations of concepts, capabilities, people and organizations that exploit our nation’s advantages and protect against our asymmetric vulnerabilities to sustain our strategic position, which helps underpin peace and stability in the world.”¹⁹⁵ Consistent with what both Rumsfeld and Cebrowski had embraced by this point is that transformation was to be a “process” not a specific end state to be achieved. However, this rather general definition of the term drew criticism from many who claimed it was simply a way of justifying the status quo and major acquisition plans which “robbed it of substantive meaning.”¹⁹⁶

D. Implementing Change: Activities of the Office of Force Transformation

Despite the lack of formal authorities typically codified in a DoD Directive, the office proceeded to aggressively proceed with its agenda with the hope of catalyzing change throughout the department. OFT did this through a variety of initiatives, all guided by a set of overarching goals and a strategy for achieving them.

¹⁹⁵ Department of Defense, *TPG*, 3-4. Due to disappointment with the general definition of transformation, the document’s authors went on to further define the term by stating that “shaping the nature of military completion ultimately means redefining standards for military success by accomplishing military missions that were previously unimaginable or impossible except at prohibitive risk and cost.”

¹⁹⁶ Mandeles, *Military Transformation Past and Present*, 6.

Defining OFT's Goals and Strategy

Establishing a clear set of goals is an important part of an organization and facilitates the development of tasks for accomplishing the goals.¹⁹⁷ The process of goal setting and subsequent task and strategy development are essential activities within an organization. According to March and Simon, the result is a set of statements against which an organization can be judged thus affecting both its standing in the larger community and also the integrity of the subgroup comprising it.¹⁹⁸

The challenge of developing meaningful goals in a bureaucratic organization are multiple and well documented.¹⁹⁹ Wilson contends that the primary reasons for the challenge is that people differ in their definitions of key terms and that it is difficult to reach agreement on goal statements.²⁰⁰ The result is often vague, unclear, or inconsistent goals that are not particularly useful to an organization. Wilson distinguishes between these broader, less clear organizational goals as *general* goals that may orient an organization but are insufficient for deriving tasks or developing strategy. He introduces a second type of goal—operational goals—that are differentiable, measurable and may be used for developing tasks. This distinction is instructive when examining the goal setting process OFT used to define its goals and subsequent tasks and strategy for accomplishing them.

¹⁹⁷ Wilson, *Bureaucracy*, 26. In fact, despite his general skepticism of a bureaucracy's ability to develop clear goals, Wilson argues that tasks cannot be developed without the development of goals.

¹⁹⁸ March and Simon, *Organizations*, 61, 87.

¹⁹⁹ See Wilson, *Bureaucracy*, 26; Bennis, *Beyond Bureaucracy*, 135; March and Simon, *Organizations*, 61.

²⁰⁰ Wilson, *Bureaucracy*, 33.

To establish its goals, the office drew upon DoD strategic guidance and the Secretary's priorities, in particular. For example, it based its goals upon the six operational goals and four transformation pillars spelled out in the 2001 *QDR*.²⁰¹ These types of goals, in Wilson's terms, would be considered general goals since they are vague and require further definition. The *QDR* operational goals are described above but the four transformation pillars include:²⁰²

- Strengthening joint operations through standing joint task force headquarters, improving joint command and control, joint training, and an expanded joint forces presence policy;
- Experimenting with new approaches to warfare, operational concepts and capabilities, and organizational constructs such as standing joint forces through wargaming, simulations and field exercises focused on emerging challenges and opportunities;
- Exploiting U.S. intelligence advantages through multiple intelligence collection assets, global surveillance and reconnaissance, and enhanced exploitation and dissemination; and,
- Developing transformational capabilities through increased and wide-ranging science and technology, selective increases in procurement, and innovations in DoD processes.

²⁰¹ Office of Force Transformation, *Military Transformation: A Strategic Approach* (Washington, D.C.: Department of Defense, 2003), 2-3. The *QDR* "operational goals" should not be confused with Wilson's "operational goals" since the two terms are entirely unrelated. In fact, Wilson would contend that the *QDR*'s goals are not "operational" since they are platitudes that lack sufficient detail.

²⁰² *Quadrennial Defense Review Report* (2001), 32.

Based upon the department's broader set of goals for transforming, the office established its own set of goals for achieving the Secretary and President's vision. Change agents (individuals or organizations) such as OFT are frequently chartered with assisting the organization with accomplishing its existing goals or missions in new ways and OFT was no different. The goals defined by such organizations are often normative and "aroused by dissatisfaction with the effectiveness of bureaucratic organizations."²⁰³

These goal statements, while vague, are accompanied by more specific objectives from which OFT's tasks are derived. They would constitute *operational goals* in Wilson's hierarchy since they are distinguishable and measurable. In fact, some of the office's publications attach metrics to each of the goals, further demonstrating their function as operational goals. These goals, as outlined in a series of OFT presentations and official reports were:²⁰⁴

- *Transform strategy.* This top-down goal was aimed at making force transformation an integral element of DoD strategic guidance to influence future Service programs.
- *Transform the force and culture.* This goal focused on changing the force from the bottom-up through experimentation, operational prototyping and the creation of new knowledge.

²⁰³ Bennis, *Beyond Bureaucracy*, 135.

²⁰⁴ Office of Force Transformation, *Supporting Force Transformation: An Office of Force Transformation Progress Report* (Washington, D.C.: Department of Defense, September 2006), 4-5; Office of Force Transformation, *FY2005/2006 Strategic Plan* (Washington, D.C.: Department of Defense, undated), 3-6; Office of Force Transformation, *FY2006/2007 Strategic Plan* (Washington, D.C.: Department of Defense, undated), 2-6; Office of Force Transformation, "Transforming Defense," (briefing presented June 9, 2004).

- *Implement network-centric warfare.* Establishing NCW as a theory of war for the information age and an organizing principle for joint concepts, capabilities, and systems was the purpose of OFT's third goal.
- *Change metrics.* This goal sought to improve the measures by which programs are evaluated so as to promote innovative programs that might otherwise perform poorly when traditional metrics are applied.
- *Transform capabilities.* Delivering new military capabilities was a primary purpose of the office, thus a goal of OFT's was to transform the capabilities and the processes for delivering them.

These goals and the official documents in which they are conveyed were suggested by many of the former OFT staff to be primary principles around which the office's efforts were organized. However, an equal number of staff felt that the mission and purpose of the office were unclear and frequently changed, based upon the interests of the office's director and his priorities at the time.²⁰⁵ Therefore, as March and Simon contend, an organization's internal strategy becomes even more important when the more general goals are not internalized by the entire organization.²⁰⁶

²⁰⁵ According to author interviews with former OFT staff and close observers on February 12, 2012, March 8, 2012, and April 12, 2012.

²⁰⁶ March and Simon, *Organizations*, 61.

OFT's strategy for accomplishing its goals and subordinate tasks involved "operating at the intersection of unarticulated needs and non-consensual change."²⁰⁷ Unarticulated needs were those military capabilities not already institutionalized in the department and outside of the traditional core competencies of the Military Services. Nonconsensual change is institutional rejection of the proposed solution or a different way of doing things outside of the existing paradigm. The office planned to achieve this through a strategy of concept development, analysis and war gaming, and operational prototyping (of new technologies).²⁰⁸ Through this strategy, OFT sought to accomplish the tasks required to meet the goals it established (and described above).

By employing this strategy to achieve its goals, the office generated several products or outputs that informed various DoD processes. The first was the development, with the Services as lead authors, of a series of *transformation roadmaps* that specified the Services' plans for transforming. OFT managed the process of roadmap development and reviewed them to provide the Secretary of Defense a *strategic transformation appraisal*.²⁰⁹ Another product was routine input into strategic guidance such as the *TPG*, the *Defense Planning Guidance*, the *Strategic Planning Guidance*, and other leading DoD guidance documents. The office also produced annual evaluations of joint and

²⁰⁷ Office of Force Transformation, "Transforming Defense," 7. This slogan, "operating at the intersection of unarticulated needs and non-consensual change," was a major theme of the Office and frequently cited by those interviewed for this study. The phrase was used primarily by the Office's director, Admiral Cebrowski. It was adapted from business reform literature that describes *disruptive* change.

²⁰⁸ This strategy is outlined in several memoranda establishing the office and subsequent documentation. For example, see "Concept of Operations for the Office of Force Transformation," Spring 2001.

²⁰⁹ This process of developing roadmaps and the process by which they would influence DoD was first laid out in the *TPG* and then described in GAO, "Military Transformation."

Service experimentation programs, providing feedback to the Secretary. A less tangible but equally important product of the office were the dozens of speaking engagements and outside publications generated to introduce key concepts of transformation into the everyday vocabulary of those in the defense establishment.

Among the most important and highest profile products of the office were its many operational prototypes, or experimental systems sponsored by OFT to demonstrate new capabilities (resulting from either innovations in technology or applications of existing technology in new ways). It was through these prototypes that the office attempted to convey the concepts with the expectation that the Military Services would adopt or advance them.²¹⁰ It is also several of the operational prototypes that appeared to have a lasting impact on the department.

Overview of OFT Initiatives

Executing its strategy to accomplish its goals, the office launched a number of initiatives aimed at catalyzing change throughout the department. Documenting all of these initiatives is beyond the scope of this research. However, briefly surveying them is important to understanding both the breadth and depth of projects pursued by OFT. The initiatives spanned both materiel and non-materiel programs to demonstrate the need for change and alternative ways of accomplishing military tasks. They also reflected the office's character as a *think and do tank* that both conducted studies of military problems

²¹⁰ According to an author interview with a former OFT program manager on March 29, 2012. The notion of using operational prototypes to inspire change elsewhere was Admiral Cebrowski's focus. It is not unlike the approach used by the Defense Advanced Research Projects Agency which sponsors basic and applied research with the hope that Military Services will provide follow-on funding for successful projects.

and invested in new capabilities. The initiatives were designed to demonstrate the utility in the new approaches that OFT promoted.

The office organized its efforts around the five goals it was attempting to accomplish. Below are examples of leading OFT initiatives associated with each of the goals.²¹¹ The list is not exhaustive of everything with which OFT was involved. Instead, the programs are illustrative of its larger portfolio. Three of its leading initiatives—Operationally Responsive Space, Project Stiletto, and Education for Transformation—are not listed below given they are the subject of three embedded case studies in the chapters that follow.

Listed by goal, selected OFT initiatives pursued from 2001-2006 include:²¹²

Goal 1: Transform Strategy

Transformation Outreach Program. This project focused on developing a communication strategy for reaching out to the key constituents of the office including Congress, the Services, the Combatant Commands and defense industry. By reaching out to these entities, the office was able to develop support and also influence the vernacular the broader national security community used to describe transformation.

²¹¹ It's important to note that in official documents where these programs are associated with goals, they are often tied to multiple goals since they are not mutually exclusive and single programs can help to achieve more than one goal. For purposes of illustration, the programs are associated with a single goal in this survey.

²¹² The descriptions of these programs are based on program summaries presented in Office of Force Transformation, *Office of Force Transformation Fiscal Years 2006-2007 Strategic Plan* (Washington, D.C.: Department of Defense, undated).

DoD Energy Strategy. Building on prior studies sponsored by the office, this effort brought energy as an essential element of transformation to the forefront of DoD and assisted the department with developing an energy strategy.²¹³ The office's focus on this topic was pioneering and, to some extent, influenced the establishment of the office of the Assistant Secretary of Defense for Operational Energy Plans and Programs.

Disruptive Challenge Analysis. This study involved further exploration of disruptive challenges—those challenges resulting from emergent, unanticipated capabilities that dramatically undercut or neutralize U.S. military capabilities. The office was responsible for introducing this concept and the *quad chart* of disruptive, traditional, irregular, and catastrophic challenges to the 2005 *National Defense Strategy*.²¹⁴ This construct formed the basis for defense planning in the years that followed.

Goal 2: Transform the Force and Culture

Joint Experimentation Assessment. This initiative examined experimentation across the department and evaluated its objectives and the extent of innovation introduced by it. The effort involved a series of assessments of how well experimentation addressed future concepts and informed future force development.

Integrated Sensor Strategy. To assist the military with understanding and fully utilizing integrated sensors on the battlefield, this project involved the development of an integrated sensor strategy. It demonstrated how the sensors could be networked, properly

²¹³ See Scott Buchanan, "Energy and Force Transformation," *Joint Forces Quarterly*, Issue 42, 3rd Quarter, 2006 and Rita Boland, "Services Transition to Energy Sources," *Signal Online*, February 2007.

²¹⁴ See *The National Defense Strategy of the United States of America* (Washington, D.C.: Department of Defense, March 2005), 2-3. Available at <http://www.defense.gov/news/mar2005/d20050318nds1.pdf>, last accessed August 2011. See also Blaker, *Transforming Military Force*, 149.

tasked, and effectively integrated to provide updated information to the warfighter at all echelons of combat.

Shared Awareness Operational Experimental Surrogates. These tasks involved the evaluation and development of a detailed description of enhanced communication (high bandwidth and ad hoc networking) and shared situational awareness operational experimental surrogates that work in concert with electromagnetic warfare jamming. Through this description, an experiment was designed and aimed at special operations inserting into littoral regions using high-speed watercraft.

Goal 3: Implement Network-Centric Warfare

Analysis of NCW in Current Operations. The office undertook several studies that examined networked forces in ongoing operations in Iraq and Afghanistan. The purpose was to demonstrate both the strengths and weaknesses of NCW to develop recommendations for maximizing the benefits of networking while minimizing the risks. These studies, and others conducted by OFT, moved the NCW concept from being peripheral to mainstream in defense planning.²¹⁵

NCW Robotic Experiments. This project involved a series of limited objective experiments exploring the concept of human-agent, self-forming, self-healing networking across a networked infrastructure. The experiments used special forces and naval littoral operations mission scenarios.

²¹⁵ An example of this, based upon the author's experience drafting DoD guidance during this time period, was intentional exclusion of the concept from key defense guidance issued in 2002 and then embracing of the concept in subsequent volumes issued just a year later.

Joint Interoperability and Connectivity Game. To promote candid discussions among decision makers concerning organizations, requirements generation, role and commitment of required resources for interoperability, OFT executed a series of organizational wargames focused on interoperability and connectivity of military forces. The project also involved the analysis and reporting of the results of the wargames to inform various DoD processes that could institutionalize the lessons and findings from the activity.

Goal 4: Change Metrics

Assessment of Joint Operating Concepts. The development of joint operating concepts (by the Chairman of the Joint Chiefs of Staff and his staff) to depict how the joint force intends to conduct future operations was a major area of emphasis during Secretary Rumsfeld's tenure. OFT was charged with developing criteria for their evaluation and providing its assessment of the concepts to the Secretary prior to his approval of them. The office performed several tasks to accomplish this.

Analysis of Capabilities-Based Planning. Capabilities-based planning (CBP) was a new planning paradigm introduced by Secretary Rumsfeld that oriented the department's planning more towards the range of capabilities U.S. adversaries might employ and less on the specific adversary. OFT carried out a project to document CBP and related initiatives throughout the department and to develop a set of metrics for measuring its performance.

Transformation Rate Assessment and Analysis. This effort involved a broad-based, systematic analysis of the speed (or rate) of transformation and how to accelerate

it. This was the rate at which change in the department was occurring and OFT was interested in measuring it and determining the appropriate rate of change.

Goal 5: Transform Capabilities

Sense and Respond Logistics. A major initiative of the office was the development of the *sense and respond logistics* concept—“an approach that yields adaptive, responsive demand and support networks that operate in alternative structures that recognize operational context and organization.”²¹⁶ This included several related tasks involving concept development, experimentation, and prototyping. The goal of the effort was to make military logistics more adaptive and responsive to warfighter needs departing from the traditional ways of centrally managing logistics.

Project Sheriff. This effort involved the integration of a variety of capabilities on a platform in a way that hadn’t been done before. Specifically, Project Sheriff mounted directed energy and kinetic systems, both lethal and non-lethal, active protection/active defense technologies, and multiple sensors on an armored vehicle. Sheriff was designed primarily for military operations in urban environments with large civilian populations within which adversary forces may mix.

(Re) Directed Energy. The office worked with other parts of the department to advance directed energy research and concept development. They did this through the development of a directed energy architecture and a roadmap for developing the capability. OFT also experimented with re-directed energy using relay mirrors.

²¹⁶ Office of Force Transformation, “Operational Sense and Respond Logistics: Coevolution of an Adaptive Enterprise Capability,” draft concept document, May 6, 2004. Available at https://acc.dau.mil/adl/en-US/32752/file/54095/LL_BRIEFING_SARL-23Oct03_v3_.pdf, last accessed August 2011.

OFT Funding Profile

To achieve the above goals through specific initiatives, OFT received an annual budget that, although modest by comparison to other elements of DoD, steadily increased from its inception in 2001. This was due to several factors: support from Rumsfeld, successful research and development initiatives, and sponsorship from Congress.

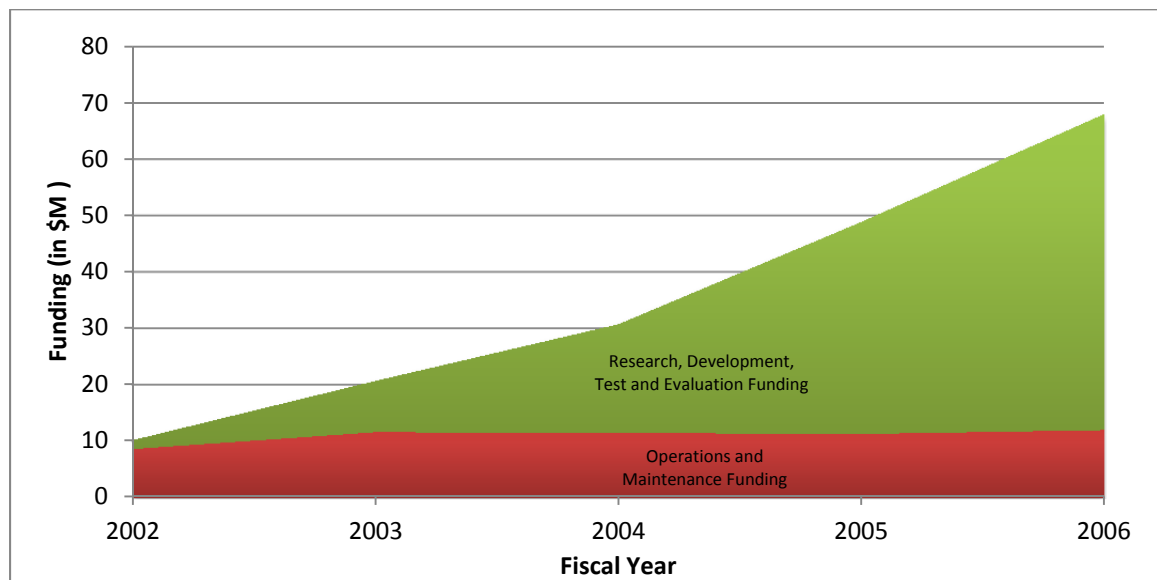


Figure 3: Office of Force Transformation Funding, Fiscal Years 2002-2006

Figure 3 shows this steady increase from just over \$10 million in fiscal year 2002 to over \$65 million in fiscal year 2006.²¹⁷ The increase from 2004 to 2005 reflected

²¹⁷ Graphic generated by the author. Data compiled from Office of Force Transformation, *Office of Force Transformation Fiscal Years 2005-2006 Strategic Plan* and *Office of Force Transformation Fiscal Years 2006-2007 Strategic Plan*.

Secretary Rumsfeld's increased priority on transformation.²¹⁸ The bump in 2005 and then again in 2006 funding was due to Congressional earmarks for two programs they placed priority on: Operationally Responsive Space and Project Sheriff. Congress was interested in promoting the fledgling R&D programs that selected members believed had potential for major advances in military capabilities.

The same funding stream can be examined by its contribution to accomplishing each of OFT's five goals. This can be done by analyzing the funding data presented in the office's strategic plans that align each of its 142 initiatives from 2002-2006 to the goals. Some of the initiatives supported multiple goals so, rather than arbitrarily dividing them across the programs, the full amount was assigned to each of the goals they supported. Such accounting preserves the value of the investment (as assigned to the goal) but results in total numbers that exceed the annual budget of the office since single initiatives often supported multiple goals.

²¹⁸ Office of Force Transformation, *Office of Force Transformation Fiscal Years 2006-2007 Strategic Plan*, 9.

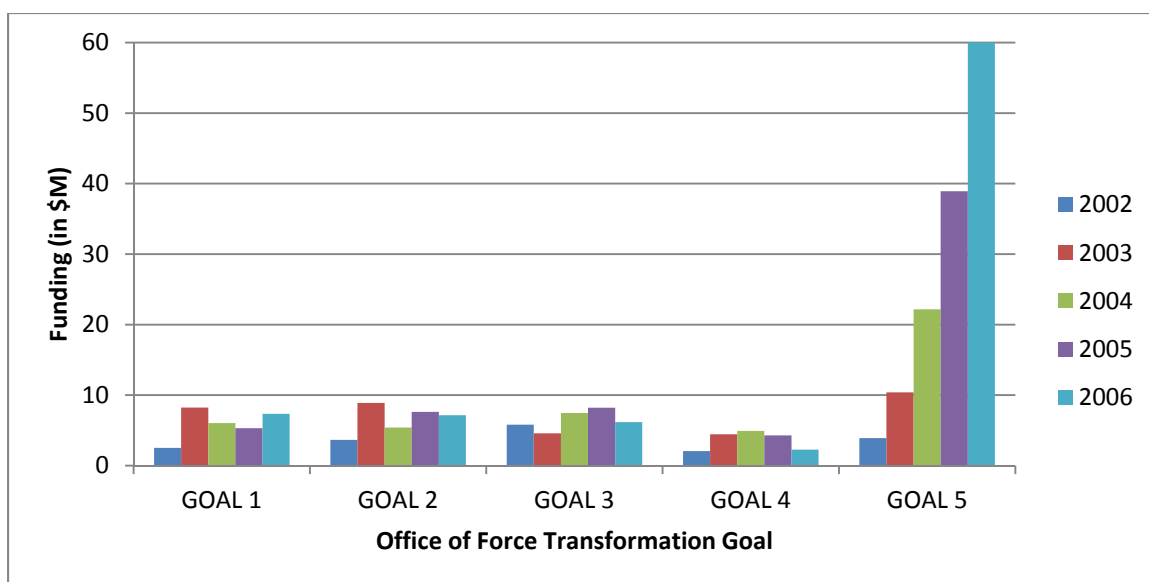


Figure 4: Office of Force Transformation Funding by Goal, Fiscal Years 2002-2006

Figure 4 shows the office’s funding by goal from fiscal years 2002-2006, according to OFT’s assignment of each initiative to the goals they supported.²¹⁹ This reflects the steady budget increases the office experienced over the same time period. It also demonstrates the fact that the budget increases in 2005-2006 were driven largely by increases to RDT&E programs supporting goal five. Goal five received considerably more funding than the other goals given that the operational prototypes support goal five and they were considerably more resource-intensive than the studies and smaller initiatives supporting the other goals. Also of note is the fact that initiatives supporting four of the five goals experienced steady increases in funding along with the overall OFT

²¹⁹ Graphic generated by the author. Data compiled from Office of Force Transformation, *Office of Force Transformation Fiscal Years 2005-2006 Strategic Plan* and *Office of Force Transformation Fiscal Years 2006-2007 Strategic Plan*.

budget. Only initiatives supporting goal three—network-centric warfare—received roughly the same funding from 2002-2006. It started out with the desired level of funding rather than having to increase over time to meet targets as the other goals did. This demonstrates that, as many pundits observed, NCW was an early and sustained area of focus for the office.²²⁰

E. Whither Change? Disestablishing the Office of Force Transformation

While other elements of DoD experienced turnover of senior leadership during the same period of time, OFT benefited from having the same director (during most of its existence) from its creation in 2001. Not only did Admiral Cebrowski provide the much-needed continuity an office charged with catalyzing change needed, but he was also an intellectual force that both created opportunities and presented a vision for the rest of the department. Indeed, his contributions to transforming DoD preceded the creation of the office and they will likely endure for decades to come. As one-time senior defense official and Cebrowski biographer James Blaker writes, his intellectual influences probably “elevate Cebrowski’s legacy to the status of grand theory.”²²¹ Cebrowski, however, served much of his time at OFT contending with terminal health problems that had resurfaced from earlier in his career. These issues led to his eventual retirement from the post in January 2005.²²²

²²⁰ Kagan, *Finding the Target*, 288 and 320.

²²¹ Blaker, *Transforming Military Force*, 226.

²²² Cebrowski later died of cancer on November 12, 2005.

Cebrowski's departure from OFT's helm engendered uncertainty about the future of the office. In the days immediately following Cebrowski's retirement, his long-time deputy, Terry Pudas, assumed the mantle of acting director of the office. Pudas had known Cebrowski for decades, helped him to establish the office, and was involved with Cebrowski in shaping and executing his strategy.

Despite this, the future of the office was unclear with entities on both sides advocating for the continuation and disestablishment of the office. Among the office's supporters was one of the key actors involved with its establishment—Congress. For example, Representative Roscoe Bartlett (R-MD), chairman of the House Armed Services Committee's Projection Forces Subcommittee expressed concern about Cebrowski's departure and conveyed strong support for OFT's continuance.²²³ On the other side of the debate about OFT's future were the Chairman of the Joint Chiefs of Staff and the Commander of U.S. Joint Forces Command who periodically argued for folding the office and its assets into their organizations.²²⁴

The office's fate was determined in August 2006 when the decision was made by Rumsfeld to disestablish OFT. The office's staff of eighteen and its budget of over \$20 million were to be folded into two existing organizations within OSD—OSD's policy office and OSD's Director of Defense Research and Engineering (DDRE). As part of a

²²³ "OFT Faces Different Future Without Cebrowski," *Defense Industry Daily*, September 26, 2005. Available at <http://www.defenseindustrydaily.com/oft-faces-different-future-without-cebrowski-01242/>, last accessed August 2011.

²²⁴ Roxana Tiron, "Military Transformation Agency at Crossroads After Cebrowski," *The Hill*, September 14, 2005. Available at <http://thehill.com/homenews/administration/4296-military-transformation-agency-at-crossroads-after-cebrowski>, last accessed August 2011.

reorganization, Pudas took much of his staff and some of the financial resources to become the acting Deputy Assistant Secretary of Defense for OSD(Policy)/Forces Transformation and Resources Office (OSD(P)/FT&R). The remainder of the staff and a bulk of OFT's funding went to a new office in DDRE called the Rapid Reaction Technology Office (RRTO) where they continued to advance four of OFT's operational prototypes: Wolf Pac, Operationally Responsive Space, Stiletto, and redirected energy. Those in favor of the decision to merge OFT with other elements of OSD contend that it was the logical next step for institutionalizing transformation within the department. However, others didn't agree that the resulting proximity to the policymaking apparatus equated to more influence for transformation initiatives and their advocates.²²⁵ Some long-time observers and Pentagon insiders even argued that disbanding OFT was "the wrong symbolic and substantive move" for transformation and the administration's approach to it.²²⁶

With the office shuttered, opinions surfaced about its existence and how others viewed its accomplishments and the fate of the transformation agenda. Some claimed that it is "hard to pin down anything concrete that has come out of the office."²²⁷ Others questioned the impact of the office on the larger department stating "the extent of influence that the OFT has had on the rest of the department is debatable, and many view

²²⁵ Josh Rogin, "Defense Transformation Searches for New Identity," *Federal Computer Week*, April 16, 2007. The sentiment was expressed by John Garstka, an intellectual driver behind NCW and assistant director of OFT, then director of force transformation in OSD(Policy).

²²⁶ Christopher Lamb and Michael Casey, "Fading Transformation: Reject Any Effort to Close OFT," *Defense News*, November 14, 2005.

²²⁷ Herspring, *Rumsfeld's Wars*, 63.

the office as merely an applique.”²²⁸ Some of the criticism of OFT reflected more of a referendum on Rumsfeld’s vision of transformation given that many of the same critics accused the Secretary of “stretching the definition of transformation” and being distracted by ongoing wars; not focused on advancing transformation.²²⁹ And with the closure of the office in October 2006, notable defense analysts became outspoken in their declarations that transformation was “dead.”²³⁰

With the Office of Force Transformation closed, the remaining proponent for change in the department was Secretary Rumsfeld, President Bush’s initial point man on transformation. Rumsfeld, embattled himself, stepped down in November 2006 shortly after the closure of OFT. Robert Gates, Rumsfeld’s successor, was left to carry out the President’s vision of “skipping a generation” of weapons and transforming the department. However, Gates’ defense strategy referred only to transforming organizations and overseas basing and made no mention of advancing military

²²⁸ Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Defense Science Board Summer Study on Transformation, Panel on Force Capability Evolution* (Washington, D.C.: Department of Defense, August 2005), 13. None of the staff of OFT were a part of this summer study and there is little evidence that the study was either influential or widely-read amongst DoD leadership at the time.

²²⁹ Herpring, *Rumsfeld’s War*, 29. See also Graham, *By His Own Rules*, 671-672 where President’ Bush’s Chief of Staff, Andrew Card is quoted as saying of Rumsfeld that “he was lured by sirens of transformation ended up on shoals of war.”

²³⁰ Bill Rigby, “U.S. Military ‘Transformation’ is Dead: Analysts,” *Reuters*, December 7, 2006. Available at <http://uk.reuters.com/article/2006/12/07/specialeventii-aero-arms-summit-spending-idUKN0725779820061207>, last accessed August 2011. Lexington Institute President Loren Thompson called transformation a “bad joke” while a Washington-based Teal Group analyst declared transformation “dead.”

capabilities—the thrust of military transformation to that point.²³¹ For this reason and others, some noted that, although he remained committed to transformation, Gates never pursued it aggressively.²³² If Gates represented a step back for the transformation agenda then his replacement, former Central Intelligence Agency chief Leon Panetta, was a full stop. The term transformation seemingly disappeared from DoD discourse as Panetta did not refer to it in speeches nor is it mentioned in the landmark defense strategy his department co-authored with the White House.²³³ Understanding how and why transformation and OFT rose and fell requires understanding the policy environment that both gave rise to and then permitted them both to expire.

F. Identifying Transformation's Key Actors

The office's creation, rise, and ultimate decline can be chronicled as above but analyzing its experience and the impact of its key initiatives (as presented in subsequent chapters) is aided by examining it through the lens of the key actors involved. These actors may be either internal or external to the office.²³⁴ What's more, they may be characterized as individuals, organizations, or institutions. Analyzing military innovation

²³¹ See *National Defense Strategy* (Washington, D.C.: Department of Defense, June 2008). See also, Robert Gates, "A Balanced Strategy: Reprogramming the Pentagon for a New Age," *Foreign Affairs* 1 (January/February 2009).

²³² Graham, *By His Own Rules*, 688.

²³³ *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* (Washington, D.C.: Department of Defense, January 2012). The strategy was co-authored with the White House.

²³⁴ Gawthrop, *Bureaucratic Behavior in the Executive Branch*, 50-53. Gawthrop describes internal and external pressures on organizations and how they drive adaptation and change.

through such lens has proven instructive in similar studies of organizational change and permits simultaneously exploring the dynamics at various echelons.²³⁵

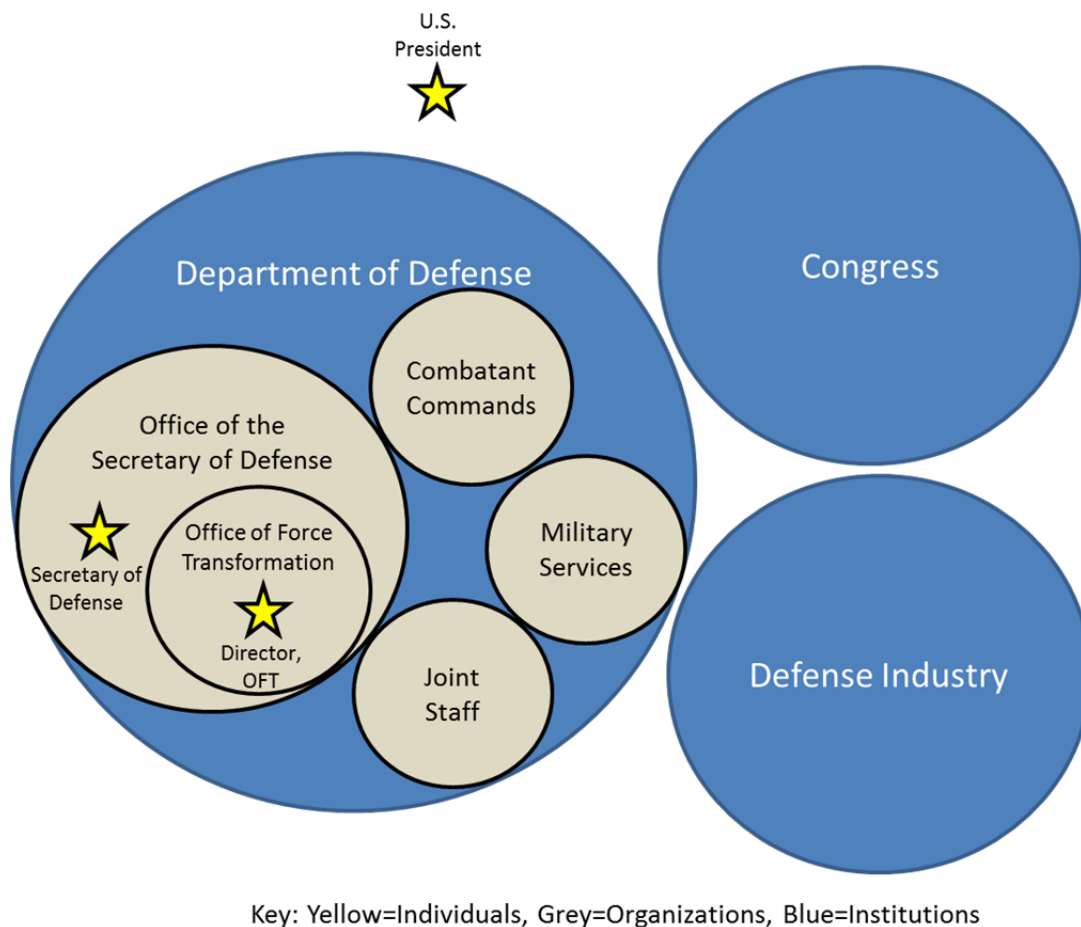


Figure 5: Major Actors in Force Transformation

²³⁵ For example, the approach was used effectively by Hone et al. in their examination of the Navy's experience with aircraft carrier aviation. See Thomas C. Hone, Norman Friedman, and Mark D. Mandeles, *Innovation in Carrier Aviation* (Newport, RI: Naval War College Press, 2011), 123-150. Certainly other models exist in the literature but they tend to overemphasize the individual, the organization, or the process.

Figure 5 shows the major actors involved with OFT's efforts to transform the department. This is not a comprehensive depiction of all actors involved in transformation; only those major actors that most directly impacted OFT's attempts to catalyze change throughout the larger department. The role of each actor is described below and elaborated throughout this study.

1. Individuals

The role of the individual in organizational change is important in American bureaucracies, relative to other countries that place more emphasis on the group or collective.²³⁶ This is such a vital element of understanding organizational dynamics that Kingdon and others have coined terms such as *policy entrepreneurs* to describe the super-empowered individuals responsible for driving change.²³⁷ The individual actors especially important to understanding the rise and fall of OFT:

U.S. President George W. Bush. Although evidence points to the National Defense Panel introducing the term transformation into the national security lexicon, it was Bush who popularized the term when he introduced it first on the campaign trail as he spoke of skipping a generation of weapons systems. With the help of advisors such as Daniel Coats and Richard Armitage, Bush repeated these themes into the early days of his presidency and carried through with his commitment by appointing a Secretary of

²³⁶ Wilson, *Bureaucracy*, 307-308.

²³⁷ See Kingdon, *Agendas, Alternatives, and Public Policies*, 122-123 and Warren Booker, "The Development and Institutionalization of Subunit Power in Organizations," *Administrative Science Quarterly* (1989): 388-410. The individual actor may be empowered as a result of hierarchical standing or other intangible forces (such as strength of personality, intellect, etc.).

Defense whom he thought would implement his vision of transforming the department. Beyond introducing the public to transformation and appointing key leadership, there is little indication that Bush did much more to advance the agenda. However, using the President's power of the bully pulpit in this manner was certainly the appropriate role for him to play in promoting the agenda.

Secretary of Defense Donald Rumsfeld. By most accounts the President's second or third choice for Secretary of Defense, Rumsfeld inherited the concept of transformation and committed to Bush that he would pursue it aggressively. However, the Secretary's early views of transformation had more to do with organizational change (as evidenced by the infamous DoD town hall meeting on September 10, 2001), than force transformation. This changed with the events of September 11, 2001 when Rumsfeld succumbed to external pressures from Congress and elsewhere to create an independent office to catalyze change throughout the department.

Upon creating the office, Rumsfeld provided the necessary bureaucratic top-cover for OFT to operate with some license even though a formal DoD directive documenting their authorities was never approved. However, as Bush's Chief of Staff Andrew Card observed, Rumsfeld was lured to the subject of transformation but was never able to deliver. This was due, in large part, to multiple ongoing military operations in Iraq and Afghanistan that demanded nearly all of his time. Since Rumsfeld spent so much time on current operations, he referred to anything new in those operations (such as calling in precision strikes on horseback) as transformational thus blurring the meaning of the term,

making it more difficult to implement.²³⁸ And while Rumsfeld provided the necessary aegis for the office to pursue its goals, he rarely met with anybody from OFT leading one former staffer to recollect that he could “count the number of times Cebrowski met with the Secretary on one hand.”²³⁹

Director of the Office of Force Transformation Admiral Arthur Cebrowski (ret).

As both an intellectual and bureaucratic leader of the office, Cebrowski provided the vision required to advance transformation in the department. He brought to the position the energy and ideas that formed the foundation of the office’s strategy for promoting change. There were at least four key factors that aided Cebrowski in his mission and his relationships with the other key actors: his history, his access, his following, and his faith.

Even prior to becoming the director of OFT, Admiral Cebrowski had a history of being a leading thinker on the topic of network-centric warfare. This dated back to his days as the director of the command, control, communications, and computers directorate of the Joint Staff where he first advocated for greater use of networking to apply military force more precisely. Cebrowski later had a pedestal from which to further develop his emerging theory while he was president of the Naval War College (where he also advocated for other non-traditional concepts and platforms). These positions and others established Cebrowski as a leading thinker on military innovation and helped him to garner support from selected actors throughout the defense community.

²³⁸ According to an author interview with a former senior OSD official on March 29, 2012.

²³⁹ According to an author interview with a former senior OFT official on March 15, 2012.

A second factor contributing to his effectiveness was Cebrowski's access or perceived access to the Secretary of Defense. Direct access to the Secretary was a stipulation of the original memorandum establishing the office, which Cebrowski sent to Rumsfeld. While this access may have been granted, it was rarely exercised and the director of OFT met only a few times with the Secretary. However, key actors throughout the department believed that Cebrowski had the Secretary's attention and that the office was carrying out his priorities. This meant DoD components were more likely to comply with the office's instructions, even though it lacked official authorities (until the *TPG* granted it a formal role).

The cadre of loyal followers he had developed over the years also aided Cebrowski in his mission. These were individuals who served with him throughout the years who were willing to take a career risk and join his fledgling office. These followers exhibited a dedication to the mission that permitted the office to accomplish more than it may have if staffed by individuals with no prior connection to Cebrowski or his vision for transformation.²⁴⁰

Cebrowski's strong Roman Catholic faith is a final factor that aided in his pursuit of transformation and shaped his emerging theory of war.²⁴¹ It is from the Catholic conception of just war theory that he sought to limit civilian casualties thus providing the motivation for NCW and other advanced technologies that improved precision on the

²⁴⁰ The notion of a dedicated, loyal staff being a major factor in the office was raised by several former OFT staff and observers during author interviews from January 2012 – February 2013.

²⁴¹ The importance of his faith has been reported by multiple sources, most notably Blaker, *Transforming Military Force*.

battlefield. He also drew inspiration from his faith as evidenced in an exchange with a senior Japanese defense official where the official asked Cebrowski how he was able to accomplish all that he had in advancing transformation and Cebrowski replied “my faith.”²⁴²

Individual OFT Staff. Although not the super-empowered policy entrepreneurs that Kingdon features as drivers of change, the individuals who comprised the staff of the office were essential. These individuals were important to advancing the key initiatives, interacting with actors from other organizations, and contributing to the pursuit of the office’s strategy. They were a combination of military, career government civilians, and on-site contractors. Many had known Admiral Cebrowski from prior assignments and most brought special skills that assisted in the accomplishment of key tasks. For example, one assistant director, Mr. John Garstka, was already an established thinker on the topic of NCW. Another assistant director, Dr. Thomas Hone, had previously served as the principal deputy director for Program Analysis and Evaluation and brought depth and perspective on topics pertaining to strategic planning and the Pentagon’s sometimes-arcane resourcing processes.

The motivations of the OFT staff varied, but most of the mid-career military and government civilians came to the office with the hope and expectation of career advancement given they were supporting a key DoD initiative.²⁴³ However, their hopes

²⁴² According to an author interview with a former OFT program manager on March 29, 2012 who was present during the exchange with the Japanese official.

²⁴³ According to author interviews with former OFT staff on February 15, 2012, February 24, 2012, and March 19, 2012.

were dashed since there are few examples of subsequent promotions resulting from OFT assignments and personnel most frequently went onto lateral assignments within their Service or OSD. According to former OFT staff, only one military officer was eventually promoted to general officer after his assignment in the office. This relatively modest placement of former staff to higher positions is in contrast to another OSD element seen as having responsibility for generating new ideas on military innovation, the Office of Net Assessment (ONA). The ONA has been successful for decades in placing its alumni in positions of authority once they left the office. This phenomenon helped ONA to plant advocates in positions of power and helped it to survive bureaucratically over the years.²⁴⁴

2. Organizations

Organizations form the intersection of individuals and institutions by empowering individual actors and also comprising the larger institution that creates the culture and procedure within which both organizations and individuals operate. They are the *rational tools* of an institution led by technicians in pursuit of very specific goals.²⁴⁵ Organizations compete, interact, and typically seek to defend (and in some cases expand) their bureaucratic turf. This tendency motivates their actions and can explain their behavior. The organizations that shaped the external environment within which OFT operated include:

²⁴⁴ According to an author interview with a former senior OSD official on March 29, 2012.

²⁴⁵ Perrow, *Complex Organizations*, 186-187. Here Perrow is describing the institutional school and, in particular, the work of Philip Selznick. This school is particularly relevant to understanding OFT because it stresses the overall environment within which actors operate and evolve.

The Office of the Secretary of Defense. The Secretary's staff, or OSD, played an important role in OFT's pursuit of its goals. Being the largely civilian staff that exists to serve the Secretary in the performance of his day-to-day duties, OSD contends with other organizations that serve military leadership and whose goals may or may not coincide with the political leadership. Within OSD there are turf battles and equities at stake that create internal pressures, in addition to the external pressures from organizations such as the Military Services and Joint Staff that have competing demands (or equities).

Given that OFT was perceived as an organizational applique by some, there were parts of OSD that already performed some of what the office set out to accomplish. For example, for decades the ONA had been responsible for long-range thinking about alternative futures and was responsible for conceptualizing the RMA. It was seen by some as a natural competitor to OFT although key ONA staff never observed such tension between the offices.²⁴⁶ Another element of OSD that shared responsibility for what OFT eventually pursued was DDRE. Responsible for advanced technology development, DDRE would have been the natural place for OFT's operational prototyping efforts and, in fact, is where the program migrated to once OFT was dissolved. Another high-profile potential bureaucratic competitor to OFT was OSD(Policy). The office was responsible for establishing the Secretary's policy on all matters and could have seen OFT as a bureaucratic threat (or at least, an unnecessary organizational applique). In fact, there was evidence of this given that it was OSD(Policy), not OFT, which was given the responsibility for developing the

²⁴⁶ According to an author interview with a senior OSD official on July 16, 2012.

department's *Transformation Planning Guidance*. Furthermore, OSD(Policy) maintained some staff responsible for monitoring and executing the Secretary's transformation agenda—arguably the responsibility of OFT, not OSD(Policy).²⁴⁷

Military Services. The Army, Navy, Air Force, and Marines have a history of military innovation. As evidenced above and widely documented, some were even pursuing transformation (under a different name) in the years leading up to Rumsfeld's transformation. The Services were best positioned to drive change in the force given their *Title 10* (of U.S. code) responsibilities for training and equipping the military.²⁴⁸ However, they each have distinct cultures that militate against change and an officer corps that does not see the need for their Service to change dramatically.²⁴⁹

The Services' relationship with OFT was tenuous at times as they exhibited reluctance to conform to everything the office was advancing. For example, "the generals and admirals would constantly find it necessary to explain to the OFT why their planned weapons systems or force structure did or did not fit into overall military transformation."²⁵⁰ Sometimes their sentiment went beyond reluctance and the Services "railed against Rumsfeld's aggressive attitude and resented OFT's intrusive role."²⁵¹ This

²⁴⁷ Principal Deputy Under Secretary of Defense for Policy, Mr. Ryan Henry, retained a special assistant for transformation. This was in addition to other staff he already had responsible for liaising with OFT and monitoring concept development and experimentation. Based upon author experiences at the time, Henry was responsible for executing the *TPG* but never implemented plans developed by his staff to do so.

²⁴⁸ Referring to Title 10 of U.S. Code on "Armed Forces," last amended January 2012, available at http://uscode.house.gov/download/title_10.shtml.

²⁴⁹ Mahnken and FitzSimonds, *The Limits of Transformation*, 80-85.

²⁵⁰ Herspring, *Rumsfeld's Wars*, 42-43.

²⁵¹ Czelusta, "Business as Usual," 38. Based upon interviews with Service staffs.

made the accomplishing the office's goals challenging given it relied on active service participation to achieve them.

Combatant Commands. The Unified Combatant Commands around the world are the operational elements responsible for specific geopolitical regions and/or military functions. They are led by four-star admirals and generals and represent the operational component closest to ongoing military operations. Their role in OFT's pursuits were largely supportive in that they benefited from any of the operational prototypes that could support near-term operations. Specifically, projects Sheriff and Stiletto were aimed at addressing near term challenges and were both were received favorably by the commands whose primary missions they supported.²⁵² Furthermore, selected OFT initiatives were aimed specifically at supporting the development of transformation plans at the Combatant Commands.

Although the Combatant Commands collectively didn't play a major role in OFT's efforts other than providing general support, one of the functional commands—U.S. Joint Forces Command (JFCOM)—was an organization with which OFT did intersect. This is because JFCOM, in addition to being the designated joint force trainer and provider, was also the command responsible for transformation and joint concept development and experimentation. Located in Norfolk, Virginia, JFCOM had been the object of much criticism with one notable study even recommending large portions of it

²⁵² According to an author interview with a former OFT program manager on March 29, 2012.

relocate to the Washington, D.C. area.²⁵³ The organizational friction between OFT and JFCOM was due to the fact that the *TPG* granted OFT some review authorities for various JFCOM activities. Additionally, as previously discussed, the Commander of Joint Forces Command reportedly recommended folding OFT into JFCOM on multiple occasions.

Joint Staff. The staff of the Chairman of the Joint Chiefs of Staff (or “Joint Staff”) was also an important organization that worked with OFT in executing Rumsfeld’s transformation agenda. The staff is organized around directorates responsible for performing the Chairman’s statutory duties. One of those duties is serving as a spokesperson for the joint force military commander. In doing so, the Chairman and his staff are to look beyond traditional Service stovepipes and consider concepts and capabilities that span all Services and enable them to operate more effectively together. Similar to its review authorities for selected JFCOM products and activities, OFT was granted by the *TPG* the task of issuing joint experimentation guidance (previously a duty performed by the Chairman) and the task of reviewing future joint concepts developed by the Joint Staff for the Secretary. Both of these OFT duties put them at odds, at times, with the Joint Staff.

The Office of Force Transformation. The office itself needs to be listed along with the other major actors but as the subject of this study and described throughout, it won’t be described in detail here.

²⁵³ Hicks, *Invigorating Defense Governance*, 54-55. The command was later dissolved by Secretary of Defense Robert Gates in August 2011.

3. Institutions

The larger environment and processes within which individuals and organizations operate are the institutions of which they are apart. Such institutions may be the composition of multiple organizations or the norms and values that govern a large community. Regardless of their type, institutions are defined by their ability to turn component organizations into a *committed polity* with clear mission and purpose, typically aided by a distinct culture and formal procedures.²⁵⁴ They are characterized by processes and procedures that govern their component organizations and often a broader sphere of influence. The institutions that comprised the external environment within which OFT operated include:

U.S. Department of Defense. The DoD is an institution unto itself in that it is comprised of other relevant actors and establishes the common set of norms and values within which the others operate. Beyond that, it is the subject of transformation in that the Secretary sought to transform both the military forces and the larger department of which they were a part. This requires recognizing the department as an institution with its own processes that must be navigated to influence change or perhaps even transform these core processes themselves. For example, the acquisition process, the (military) requirements process, and the PPBS are all a part of the DoD which transcends its components parts. Recognizing this and the interplay between the various elements of the

²⁵⁴ Perrow, *Complex Organizations*, 187-188.

institution is important to understanding the challenge of catalyzing change throughout the department.

Congress. As a branch of government, Congress represents another vast institution with its own procedures that dramatically affected the environment within which OFT operated. First, as described above, Congress played an instrumental role in the establishment of the office through the work of the congressionally-mandated National Defense Panel. Next, it provided important sponsorship of OFT initiatives. Elements of Congress were supportive of its efforts holding occasional hearings where members expressed their support of OFT.²⁵⁵ It also provided supplemental funding of specific initiatives (i.e., ORS and Sheriff) in addition to the funding OFT received from the department. Third, key members of Congress were outspoken in their support of OFT when closure of the office was under consideration.

Despite this general support for the office, Congress also presented some challenges in its defense of major weapons programs that DoD sought to terminate or scale back in pursuit of transformation. There were a number of major weapons programs at the time that leading think tanks argued should be cut in pursuit of DoD's vision of transformation.²⁵⁶ One example of congressional opposition to DoD's transformation was its ardent defense of the Crusader self-propelled artillery system whose cancellation was

²⁵⁵ For example, the Senate Armed Services Committee Subcommittee on Emerging Threats and Capabilities convened hearings to discuss transformation and generally convey support for the office. A hearing on March 14, 2003 explored transformation and the forthcoming *Transformation Planning Guidance*.

²⁵⁶ See "U.S. Military Transformation: Not Just More Spending, but Better Spending," *Center for Defense Information*, January 31, 2002.

announced by Rumsfeld in May 2002. However, several members of Congress campaigned to preserve the program prior to Rumsfeld's decision to terminate it. Those members leading Crusader's defense included senators Don Nickles (R-OK), James Inhofe (D-HI), Mark Dayton (D-MN), and representative J.C. Watts (R-OK). Many congressional supporters used jobs as a justification for the program's continuation. Senator Dayton argued that Crusader was responsible for 2000 jobs in Minnesota alone and that these workers were "working hard on Crusader for the sake of their country."²⁵⁷ The Crusader decision was but one example of several during Rumsfeld's tenure where Congress sought to preserve the status quo, thus rebuffing the Secretary's attempts to transform the military.

Defense Industry. The industry that developed military capabilities was also an essential institution providing the context within which OFT operated. This is because it was responsible for developing the systems that some in the administration dubbed legacy and were targeted for cancellation or cuts. However, the industry would also be relied upon to develop new transformational capabilities that OFT promoted.

The primary reason for defense industry being such a powerful institution factoring into OFT's efforts to transform the department is what President Eisenhower referred to as the "military industrial complex" in a 1961 speech. Eisenhower referred to the close relationship between the military and the defense industry and the industry's influence on Pentagon decisions. This relationship was expanded and referred to by many as the *iron triangle* when including the role of Congress in the process. The Crusader

²⁵⁷ "Crusader is More than Political Pork," *St. Paul Pioneer Press*, May 27, 2002.

example above also illustrates the role of industry in defense decision making during OFT's efforts to transform the department. As the program came under fire in early 2001, industry stakeholders formed the Crusader Industrial Alliance to "inform the public and educate national policymakers" and lobby Congress. When Secretary Rumsfeld signaled his interest in cancelling the program, the alliance and United Defense International, the primary stakeholder, stepped up their lobbying efforts considerably. Despite this, the campaign was not sufficient in staving off the eventual cancellation of the program.²⁵⁸

However, defense industry was not necessarily viewed as an opponent by OFT. The office actively reached out to industry through its many speaking engagements at industry-sponsored events and also its sponsorship of selected defense start-ups (such as M Ship Co and SpaceX).²⁵⁹ OFT used the speaking engagements to introduce new terms to the national security community discussion of transformation. Through its sponsorship of fledgling defense companies, it attempted to demonstrate that there were opportunities for the rest of industry in the pursuit of transformational initiatives.

The preceding chapter provides the general background and context within which OFT operated. Transformation as a concept had emerged prior to the establishment of the office but was punctuated by the speeches of President George W. Bush and then by the words and actions of his selection for Secretary of Defense, Donald Rumsfeld. OFT was established as a direct report to the Secretary and had a wide range of responsibilities,

²⁵⁸ The extensive lobbying campaign is detailed in Julius W. Hobson Jr., "Military and Defense Lobbying: A Case Study" in *Routledge Handbook of Political Management*, ed. Dennis Johnson (New York: Routledge, 2009), 463-565.

²⁵⁹ According to author interviews with former OFT staff, in particular, an interview conducted on February 28, 2012.

none of which were codified in formal DoD directives. The effective execution of its strategy and the implementation of its key initiatives were based largely upon the priority the Secretary (and President) placed on the agenda, the perceived access the office had to senior leadership, the intellectual leadership of the office's director, and the efforts of a loyal, and talented staff. The fate of OFT's initiatives and, ultimately, the office itself was influenced by a complex set of actors in the defense community engaged in a constant struggle for turf and leadership on the issue of military transformation. The following chapters examine these phenomena more closely by analyzing OFT's pursuit of three leading initiatives to answer this study's main research question: was the DoD's Office of Force Transformation successful at advancing its leading transformation initiatives?

CHAPTER FIVE: CASE ONE—OPERATIONALLY RESPONSIVE SPACE

Our space capabilities are a prominent feature of the global advantage we currently enjoy. However, the space technology context is changing, making possible a movement to an additional business model and an expanded business base for space...The door for small, micro and nanosatellites is open, allowing us to redefine cost and mission criticality curves, increase transaction and learning rates and the ability to assume risk. As we move towards the age of the small, the fast and the many, it's time to start thinking about applying that movement to our model for space. Adopting this complementary and broader business model will help us ensure space superiority well into a future where space will be yet more responsive to our joint military forces.²⁶⁰

Arthur Cebrowski, 2004
*Statement Before the U.S. Senate
Armed Services Committee*

Since the dawn of the space age, expensive, high-endurance, national satellite assets that serve a variety of purposes have dominated the space domain. These satellites are typically under high-demand by their users. This model has served the United States well until recently as it faces at least two major challenges: high-tech adversaries capable of targeting these limited quantities of satellites and military commanders who demand more coverage than the current inventory of national satellites can deliver. In the first case, sophisticated adversaries such as China, which demonstrated an anti-satellite

²⁶⁰ Arthur Cebrowski, Statement Before the Subcommittee on Strategic Forces, U.S. Senate Armed Services Committee, March 25, 2004, 2-3. Available at www.fas.org/irp/congress/2004_hr/032504cebrowski.pdf, last accessed August 2010.

capability in January 2007, threaten national satellites.²⁶¹ Additionally, U.S. experiences in operations Desert Storm and Enduring Freedom demonstrate how military commanders are demanding more space-based intelligence, surveillance, and reconnaissance (ISR) than the national satellites can offer.²⁶²

To address these operational needs and respond to Secretary Rumsfeld's call for new business models for developing and employing space systems, OFT created the concept of *Operationally Responsive Space* (ORS). It tested the concept through sponsorship of a series of tactical satellite (TacSat) experiments beginning in 2003.²⁶³ Furthermore, it was suggested about this emerging concept that, "As we are the threshold of transforming ourselves to a network-centric military, using coherent effects of distributed military forces and systems to achieve commander's intent, the newer, smaller elements of space capability emerge as a toolset providing virtually unlimited potential."²⁶⁴

The concept of ORS was to provide less expensive, more responsive (or demand-driven) access to space to better meet the needs of the regional Combatant

²⁶¹ Eric Sayers, "An Outer Space Defense Bargain," *Armed Forces Journal*, October 2008. Available at <http://www.afji.com/2008/10/3651724/>, last accessed August 2010.

²⁶² Russell G. Dewey and James Bishop, "Common Data Link from Space--Preliminary Lessons from the TacSat 2 Demonstration Program" (paper presented to the *Military Communications Conference*, 17-20 October 2005). See also Jeremy Singer, "U.S. Military Sees Promise in Faster, Cheaper TacSats," *Space News*, August 16, 2006. Available at http://www.space.com/business/technology/060816_tacsats.html, last accessed August 2010.

²⁶³ Most accounts of the genesis of Operationally Responsive Space and the Tactical Satellite series credit OFT with being the catalyst. For example, see Keith J. Costa, "Air Force Seeking Support for Making TacSat 2 a Concept Demo" *Inside the Pentagon*, May 13, 2004. Available at <http://www.spacex.com/media.php?page=31>, last accessed August 2010.

²⁶⁴ Cebrowski, "Statement Before the Subcommittee on Strategic Forces, U.S. Senate Armed Services Committee," 6.

Commanders.²⁶⁵ Doing so required developing low-cost tactical satellites that could be easily adapted for mission-specific payloads. A dual challenge is the development of low-cost launch vehicles for delivering the small satellites into orbit. OFT's first test of the concept was in development of TacSat-1. A number of forces led to the development of the initial program and shaped its progression into what it is today.

The following chapter analyzes OFT's experiences with one of its leading initiatives— ORS—to identify areas of strength, weakness, and overall performance. It does so by examining the internal and external variables introduced in preceding chapters and the various actors involved with ORS development. The study's research question is then addressed by evaluating the performance of OFT by applying the criteria of productivity, effectiveness, and impact (as presented in Chapter Two) to ORS. Subsequent chapters apply the same approach to examining other leading OFT initiatives.

A. Motivating Factors: The Genesis of Operationally Responsive Space

Several factors drove the pursuit of ORS by OFT during the early 2000's. Among these factors, both the department and the office established goals which ORS helped to achieve. The department's 2001 *QDR* stated as one of its six operational goals "enhancing the capability and survivability of space systems and supporting infrastructure."²⁶⁶ Of the remaining five *QDR* goals, ORS was intended to directly support at least three of them. OFT too had organizational goals that ORS was intended

²⁶⁵ Sayers, "An Outer Space Defense Bargain."

²⁶⁶ *Quadrennial Defense Review Report* (2001), 30.

to support. The program advanced OFT's fifth goal, to "transform capabilities," and also its third goal "implement network-centric warfare." The office's director saw space as a venue "...where new a new business strategy combining new technology with new operational concepts can have a profound impact on how information energy can be applied on the battlefield. This may involve capabilities to generate very small payloads."²⁶⁷

In addition to the organizational goals supported by ORS, both DoD and OFT benefited from leadership that had background and interest in strengthening U.S. space capabilities. Rumsfeld, prior to his second tour as Defense Secretary, chaired the Commission to Assess United States National Security Space Management and Organization where he became a strong proponent of improved military access to space. The final report of the commission stated that "one key objective of these technological advances must be to reduce substantially the cost of placing objects and capabilities in orbit, while providing the means to launch operationally useful satellites, both on short notice and on routine schedules."²⁶⁸ Rumsfeld carried these concepts to DoD in his initial, albeit limited, guidance to Admiral Cebrowski, upon assuming the directorship of the new office when he told Cebrowski to "do something about space."²⁶⁹

²⁶⁷ Arthur Cebrowski, "What is Transformation" (speech delivered at the Center for Naval Analyses, November 20, 2002).

²⁶⁸ *Report of the Commission to Assess United States National Security Space Management and Organization*, January 2001, 30. Available at <http://www.dod.gov/pubs/space20010111.pdf>, last accessed August 2011.

²⁶⁹ According to an author interview with former senior OFT official on March 15, 2012, who was present at the inception of the office.

While the alignment of goals and leadership vision may have been important motivators for the ORS program, it was the opening of what Kingdon called *policy windows* that permitted it to proceed, where past efforts had faltered. He called such windows “the opportunity for a launch” when the “target planets are in proper alignment.”²⁷⁰ Such an alignment existed for ORS to take off given the “political environment in which these technical and operational ideas converged has changed remarkably since these concepts were first offered many years ago.”²⁷¹ Prior to ORS, the political environment (or “political stream” in Kingdon’s policy model) did not demand operationally responsive space capabilities. Throughout the 1970’s, detente created a strategic environment in which major space platforms were sufficient for achieving military objectives. The 1980’s saw an increasingly aggressive posture towards the Soviet Union but by the time support for smaller, more rapidly deployable satellites emerged, the Cold War came to an end and neither resources nor political support for such an effort existed.²⁷²

Beyond changes in the political stream, a policy window may open “because a new problem captures the attention of governmental officials and those close to them.”²⁷³ In the case of ORS, that problem was the January 2007 Chinese test of a new direct ascent anti-satellite (ASAT) weapon against one of its satellites. This followed a 2006

²⁷⁰ Kingdon, *Agendas, Alternatives, and Public Policies*, 166.

²⁷¹ Scott Larrimore, *Operationally Responsive Space: A New Paradigm or Another False Start* (Maxwell Air Force Base, AL: Air University, April 2007) 4.

²⁷² Larrimore, *Operationally Responsive Space*, 24.

²⁷³ Kingdon, *Agendas, Alternatives, and Public Policies*, 168.

incident where the Chinese illuminated a U.S. reconnaissance satellite with a laser ASAT weapon; the satellite was undamaged. Together, these events led to a groundswell of congressional support as Senator Jon Kyl and former ranking member of the Permanent Select Committee on Intelligence, Representative Jane Harman, and then Chairman of the Strategic Forces Subcommittee, Representative Terry Everett, called on the nation to create new operationally responsive space capabilities to address this new threat.²⁷⁴ It was this perfect storm of changes in the political stream and the emergence of a looming problem that forced open the policy window that permitted ORS to advance, where prior efforts had stumbled. However, there were several notable antecedents to ORS that laid the foundation for tactical satellites.

The concept of utilizing satellites to support theater and tactical forces is not a new one. Indeed, as early as 1969 a geosynchronous tactical satellite called the Tactical Communication Satellite (TACSAT) was launched to provide ultra-high frequency communications to mobile field units. A suite of tactical satellites emerged from this effort including the Navy Fleet Satellite Communications satellite and the Leased Satellite systems. These efforts continued into the next decade with the establishment of the Army's Tactical Exploitation of National Capabilities space program and the creation of similar programs in the other Services. With the heightening of the U.S.-Soviet

²⁷⁴ See Terry Everett, "Space: The Strategic Enabler" (speech delivered to Strategic Space and Defense Conference, Omaha, Nebraska, October 11, 2006). Available at <http://votesmart.org/public-statement/218623/everett-remarks-to-the-strategic-space-and-defense-conference#.UTJnUutKk0o>, last accessed August 2011. See also The Center for Strategic and International Studies, "Decision 2008: China's Anti-Satellite Weapons Launch," 8 March 2007, http://www.csis.org/media/csis/events/070308_csis_asat.pdf, last accessed April 2007.

tensions in the 1980's and the new focus on missile defense with the Strategic Defense Initiative, space capabilities continue to be an emphasis and were manifested in programs such as the Tactical Space System whose operational requirements were eventually validated in 1990. They were the basis for the eventual Air Force Responsive Replacement Vehicles (or RESERVES) concept. Around the same time, the National Aeronautics and Space Administration (NASA) became involved in the pursuit of tactical satellites as they attempted to build and fly 16 “faster, better, cheaper” small satellites from 1992 to 1999 with a success rate of 63 percent.²⁷⁵

In parallel with the development of small satellites dating back to the 1960's, the United States retained the ability to launch these vehicles into Low Earth Orbit (LEO) using rockets that could be assembled and launched in a matter of weeks. These systems included the SCOUT rocket followed by Pegasus, Taurus, and Minotaur launch vehicles. Although none of these early initiatives expanded to address the military's need for responsive launch, efforts were renewed immediately prior to OFT's promotion of ORS with the Air Force approval of the Operationally Responsive Spacelift Mission Needs Statement in 2001. This effort was later cut due to budgetary pressure and folded into the Service's Operationally Responsive Space budget line in 2004. Another relevant effort is the Force Application and Launch from the Continental United States (or FALCON) program jointly developed by the Defense Advanced Research Projects Agency (DARPA) and the Air Force. The program includes two dimensions: development of a

²⁷⁵ Howard E. McCurdy, *Faster, Better, Cheaper: Low-Cost Innovation in the U.S. Space Program* (Baltimore, MD: The John Hopkins University Press, 2001), 5 – 12, as cited in Larrimore, *Operationally Responsive Space*, 11.

small launch vehicle and also a hypersonic vehicle demonstrator. Taken together, these motivations and program developments provide the context for the eventual emergence of OFT's ORS program.

B. Transforming DoD Through Operationally Responsive Space

Despite its history with small satellites, DoD had failed to develop a sustained program yielding deployed capabilities. That is why OFT generated the ORS concept, demonstrated it through a series of experiments, and gave rise to a program office. The following describes the development of ORS, key actors involved, the resources committed to it, and some of the major challenges it experienced.

1. Development of the ORS Program

In 2004, the Office of Force Transformation launched the TacSat (for "tactical satellite") series of experiments to demonstrate to the department and achieve the larger goal of operationally responsive space. OFT referred to the program as *experimental* because it was intended to be an iterative learning experience open to both success and failure. The office initiated TacSat in response to Secretary Rumsfeld's guidance to create a new business model for developing and employing space systems.²⁷⁶ The objective of the TacSats was to design, build and launch a satellite to address an operational need in one year and for less than \$15 million including launch.²⁷⁷ Other

²⁷⁶ U.S. Government Accountability Office, "Space Acquisitions: DoD Needs a Department-wide Strategy for Pursuing Low-Cost, Responsive Tactical Space Capabilities," GAO Report GAO-06-449, March 2006, 3-4.

²⁷⁷ Office of Force Transformation, *Operationally Responsive Space: A New and Complementary Business Model*, Summer 2004. Available at www.hsdl.org/?view&did=452138, last accessed August 2011.

requirements of the new satellite was that it was to be an organic part of the joint (military) task force, provide operationally useful coverage, minimize the time to deployment, maximize the payload capability, and providing sensing without detection by an adversary.²⁷⁸ The way OFT planned to achieve such short development timelines was to establish standard spacecraft interfaces and specifications. This would permit *plug and play* installation of satellite components or payloads.

The series of TacSat experiments presented a departure from traditional space system development and employment. One departure was in the intended lifespan of the new satellites. Where larger satellites are expected to remain in orbit for fifteen to twenty years thus driving a higher level of cost and complexity, tactical satellites are intended to be in service only a few years, which keeps complexity and costs down. This results in a vastly different development and acquisition mindset between the two distinctly different business models. Another departure from traditional satellites which route their collected data through layers of processing and filtering, is that tactical satellites are designed to transmit their data directly to commanders in theatre for real-time processing for battlefield decision making. A major difference introduced by tactical satellites was the drive towards common standards and plug-and-play capabilities. In contrast, larger

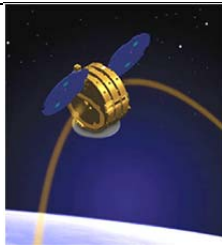

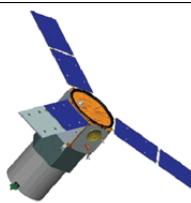
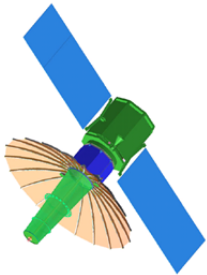
²⁷⁸ Jay Raymond, Greg Glaros, Joe Hauser, Mike Hurley, “Operationally Responsive Space: TacSat 1 and a Path to Tactical Space” (paper presented at the Second Annual AIAA Responsive Space Conference, April 20-22, 2004, Los Angeles, California), 4. Available at <http://www.responsivespace.com/Papers/RS2/SESSION%20PAPERS/SESSION%205/HURLEY/5003P.pdf>, last accessed August 2010.

satellites are each unique with novel specifications thus driving the development timeline and cost.²⁷⁹

The office sponsored the development of four TacSats, each with different developers and payloads. Table 2 provides a summary of each of the TacSats. Although OFT inspired all of the TacSats, it was TacSat-1 that OFT was most responsible for given its rapid development and the fact that subsequent TacSats were transitioned to other offices for launch. Therefore, only TacSat-1 is described in detail although experiences with other TacSats will also be addressed below.

²⁷⁹ The “plug and play” aspect and the common bus standard were two important features of ORS which facilitated the rapid fielding of satellites and changed the way the space industry developed capabilities. See Gerry Murphy, “Plug and Play for ORS: What Does it Do for Us? An Industry Perspective” (presentation, Design Net Engineering, November 1, 2007).

Table 2: Summary of TacSats 1-4

	TacSat-1	TacSat-2	TacSat-3	TacSat-4
	 <p>Credit: Navy Research Laboratory</p>	 <p>Credit: U.S. Air Force</p>	 <p>Credit: Kirtland AFB</p>	 <p>Credit: Responsivespace.com</p>
Developer	Navy Research Laboratory	Air Force Research Laboratory	Air Force Research Laboratory	Navy Research Laboratory/ Air Force Research Laboratory
Payloads	<ul style="list-style-type: none"> • Tactical radio frequency search • Visible camera • Infrared camera • Payload scheduling via SIPRNET 	<ul style="list-style-type: none"> • Visible camera • Common Data Link Transmitter 	<ul style="list-style-type: none"> • Hyperspectral sensor • Panchromatic • Data exfiltration communication 	<ul style="list-style-type: none"> • Blue force tracker
Launch Date	Never launched	December 16, 2006	May 19, 2009	September 27, 2011
Booster	SpaceX Falcon 1 (planned)	Minotaur	Minotaur	Minotaur
Mass	150 kg	370 kg	400 kg	460 kg
Cost ²⁸⁰	\$9.3 M	\$39 M	\$40 M	\$41 M

The TacSat-1 was developed by the Navy Research Lab along with Massachusetts Institute of Technology's Lincoln Laboratory, which was responsible for building the

²⁸⁰ Government Accountability Office, DOD Needs Responsive Space Capabilities, 9.

satellite. The Air Force Space Command's Space and Missile Center was to provide missile oversight for the commercial booster rocket along with launch facility and Services. The National Reconnaissance Office provided the payload facility. SpaceX was another key TacSat-1 partner given they were to supply the Falcon I launch vehicle.²⁸¹ Once completed, TacSat-1 was about 20 inches high and 40 inches in diameter. Featuring visible-light and infrared cameras, TacSat-1 had its own Secret Internet Protocol Router Network (SIPRNET) address, through which users could control the small satellite and access data. It was to include both signals intelligence and cued medium-resolution imagery payloads.²⁸² TacSat-1's purpose was to provide visible and infrared imagery to military commanders via the SIPRNET.

TacSat-1's overall objectives mirrored those of OFT's broader goals for ORS.²⁸³ The primary goal was to demonstrate a complementary business model for rapidly developing responsive space capabilities and inspire adoption of it throughout the department. The second objective was to launch within a year of starting the project to demonstrate responsiveness. The third objective was to make the asset an organic part of the Joint Task Force by providing access to it and the tasking of it through secure SIPRNET connection. The last objective was to develop processes and generate lessons

²⁸¹ For a listing of project partners and their roles, see GlobalSecurity.Org, "TacSat/Joint Warfighting Space," available at <http://www.globalsecurity.org/space/systems/tacsat-jws.htm>, last accessed August 2010. See also Robert K. Ackerman, "Small Satellite Offers Glimpse of the Future," *SIGNAL Magazine*, January 2004.

²⁸² Dewey and Bishop, "Common Data Link from Space--Preliminary Lessons from the TacSat 2 Demonstration Program," 1020.

²⁸³ These goals are described in greater detail in Jay Raymond et al., "Operationally Responsive Space: TacSat 1 and a Path to Tactical Space," 2-4.

both of which would facilitate the implementation of an ORS business model in the department. Similar to its other initiatives, OFT used TacSat-1 (and its successors) to demonstrate to DoD components the feasibility of a new approach and technology with the hope that they would follow suit and adopt a similar program for developing and acquiring space capabilities.

Despite being assembled in record time and with a modest budget, TacSat-1 was never launched due to repeated launch delays. The satellite was completed in 2003 and approved for launch the following year on a SpaceX Falcon 1 booster. However, the Falcon 1 experienced failures in its first three flights, thus delaying the launch of TacSat-1. Once the rocket proved successful, other payloads were designated for its maiden flight and TacSat-1 never made it onto the manifest.²⁸⁴ Experiencing repeated delays, SpaceX continued to scrub missions citing technical difficulties such as “faulty pressurization valve caused a vacuum condition” in one of the structure’s tanks.²⁸⁵

TacSat-2 was the first of the satellites to actually be launched. It was launched by a Minotaur I rocket from the Mid-Atlantic Regional Spaceport (MARS) in December 2006. Its payload included eleven imagery and technology demonstrations with the primary instrument being the Earth Surface Imager. The mission was considered a success but a reported dispute between the U.S. Navy and the National Reconnaissance Office

²⁸⁴ Stephen Clark, “Experimental TacSat Craft Struggling to Reach Space,” *Spaceflight Now*, January 16, 2009. Available at <http://www.spaceflightnow.com/news/n0901/16tacsat/>, last accessed August 2010.

²⁸⁵ Rati Bishnoi, “Conferees Want Single Office to Manage Small Satellite Technology,” *Inside the Pentagon*, December 22, 2005.

prevented some of the sensors from being tested.²⁸⁶ TacSat-2 ended operations in January 2008 and decayed from orbit on February 2011.

The third in the TacSat series, TacSat-3, launched in May 2009 and was also on a Minotaur booster and launched from MARS. It carries a hyperspectral-imaging payload and was the first of the series to be operated under the new Operationally Responsive Space Office. Upon conclusion of the experimental phase of its mission, TacSat-3 was brought into service with the U.S. Space Command, reportedly for detection of underground tunnels and roadside bombs.²⁸⁷

The last of OFT's initial TacSat series, TacSat-4, was launched September 27, 2011 from Kodiak Space Complex in Alaska. The satellite utilizes a highly elliptical orbit to provide coverage in high latitudes and theaters around the world. It is a 45 kg satellite powered by twin solar arrays generating one kW of power. TacSat-4 is equipped with a 12 foot high-gain ultra-high frequency antenna, which will provide ten communications channels to complement those provided by geosynchronous communications satellites.

A major reason why OFT pursued ORS and the TacSat series was to shift the DoD culture of advanced capability development and, in particular, space capabilities.²⁸⁸ There were several ways that ORS presented a new business model that might influence the prevailing culture surrounding *big space* (or traditional space capability development and acquisition). First, ORS focused on delivering rapidly deployable capability within

²⁸⁶ Graham, "Orbital Minotaur I Launches with ORS-1 Following Eventful Count," 2011.

²⁸⁷ Ibid.

²⁸⁸ Based upon author interviews with former OFT staff on February 15, 2012 and March 15, 2012.

specified time and resource constraints. This forced the process of capability development to consider what was achievable and then work to specific timelines rather than develop elaborate requirements for sophisticated capabilities expected to orbit for ten to fifteen years. This sea change of using time and resources to drive rapid development was one OFT's director had used in previous leadership positions with great success.²⁸⁹

A second feature of the new ORS business model was that it was demand-centered as opposed to supply-driven.²⁹⁰ That is, it derives the number of satellites required based upon requests from the users. This is compared to the more traditional approach that produces highly sophisticated platforms on long timelines and then simply managing the requirements for the services they provide. This demand-centered approach moves satellite acquisition from technical specification procurements towards utilizing commercially available items that are rapidly deployable. It increases the number of units that can be delivered, lowering costs, and increasing the acceptable level of risk (given the units are more expendable).

A final example of how the ORS business model changes the culture of capability development and employment in DoD is the concept of operations it employed for putting the tasking of space assets in the hands of joint force commanders. It accomplishes this by minimizing the amount of organizational and infrastructure support

²⁸⁹ According to an author interview with a former OFT program manager on March 29, 2012 where the interviewee attributed the management technique as one Admiral Cebrowski employed with success while director of the Joint Staff Directorate J-6.

²⁹⁰ Jay Raymond et al, "Operationally Responsive Space: TacSat-1 and a Path to Tactical Space," 8-9.

needed to request and deploy the asset.²⁹¹ This is done, in part, by loading critical mission data (such as orbits, tasking location, and downlink instructions) onto the platform before it is launched, thus enabling instant mission activation without the requirement of ground or communications network infrastructure in theater. When taken together, these features of the ORS business model constituted a major cultural shift in the way DoD typically developed, acquired, and employed space capabilities thus providing a model for the rest of the space community. Some of ORS's proponents argued these same features resulted in what Clayton Christenson calls *disruptive innovation*.²⁹²

2. Key Actors in ORS

The ORS initiative involved the interaction of a variety of actors at three levels: individuals, organizations, and institutions. Table 3 provides an overview of the actors and their roles. Greater detail is provided on selected major actors below.²⁹³

²⁹¹ Ibid., 10.

²⁹² Arthur Cebrowski and John Raymond, "Operationally Responsive Space: A New Defense Business Model," *Parameters* (Summer 2005): 69.

²⁹³ The table was created by the author but adapted from Larrimore, *Operationally Responsive Space*, 34.

Table 3: ORS Key Actors

Actor	Role
Individuals	
Secretary of Defense (Rumsfeld)	Provided initial guidance to director OFT to improve space capabilities
Director, OFT (Cebrowski)	Launched the ORS initiative and actively advocated for it before other key actors (i.e., Congress)
Executive Agent for Space (Under Secretary of the Air Force)	Acquisition authority for ORS program office procurements
Organizations	
Office of Force Transformation	Originator of the ORS initiative and sponsor of TacSats 1-4
Naval Research Laboratory	Program Manager for TacSats 1 and 4
Air Force Research Laboratory	Program Manager for TacSats 2 and 3
Defense Advanced Research Project Agency	Leading management of FALCON small launch vehicle program
Operationally Responsive Space Office	Runs DoD ORS program and assumed responsibilities previously held by OFT
Air Force Space Command (AFSPC)	Requirements validation (if delegated by USSTRATCOM), military utility assessments, ORS analysis of alternatives
National Reconnaissance Office	Owners/operators of spacecraft potentially requiring reconstitution
Joint Warfighting Space Program Office	Established in 2005 within Detachment 12 of AFSPC's Space and Missile Center
U.S. Strategic Command (USSTRATCOM)	Validates ORS program office requirements; participates in ORS program office acquisition decisions
Institutions	
Congress	Pushed for TacSat programs and program office in 2006/2007 authorization bills
Defense Industry	
AirLaunch LLC	Winners of DARPA FALCON SLV contracts
Space Exploration Technologies (SpaceX)	Winner of DARPA FALCON SLV contracts

Individuals

As demonstrated, the notion of tactical satellites is one that the United States had flirted with since the 1960's but hadn't materialized until the creation of the ORS initiative. There were a number of individuals that were critical to advancing the effort. One important individual actor was Secretary of Defense Donald Rumsfeld who provided the guidance to the incoming director of OFT to "do something about space." Rumsfeld's interest in promoting space capabilities was rooted in his recent experience chairing the U.S. space commission.

The individual arguably most responsible for advancing ORS was the Director of OFT Admiral Arthur Cebrowski who, taking Rumsfeld's guidance, developed the program with the assistance of his staff.²⁹⁴ He did so based upon his interest in network-centric warfare and in creating new business models for developing military capabilities. Cebrowski didn't simply oversee the ORS effort but was actively engaged in it, regularly speaking about it and advocating for it before members of Congress.

A third individual of note was the Under Secretary of the Air Force, General Pete Teets, serving as the Executive Agent for Space. This role was important in the development of ORS, irrespective of who held the position.²⁹⁵ This is because of the historic role of the Service developing and managing space assets, their obvious equities in ORS, and the fact that they became responsible for managing the eventual ORS

²⁹⁴ Most sources on ORS credit OFT and specifically Cebrowski with creating and advancing the initiative. See Larrimore, *Operationally Responsive Space*, 2.

²⁹⁵ Teets held the position from 2001-2005 and was succeeded by Dr. Ronald Segal who held the position until 2007.

program as it transitioned from OFT to the Air Force.²⁹⁶ Throughout the early stages of ORS, some observed a natural tension between OFT and the Air Force in that the latter was seen as more interested in preserving their equities in big space.²⁹⁷ This tendency for the Service's preservation of the status quo is seen in its broad definition of ORS when compared to OFT's and Congress's stricter definition that focused on small size and rapid deployability.²⁹⁸ As observed in Teets' February 2004 testimony before Congress where he defined ORS as a means to "create a more responsive, reliable, and affordable family of systems capable of fulfilling both current and future launch requirements, and the corresponding responsive and affordable satellites."²⁹⁹

Organizations

A myriad of organizations were involved with the development of ORS and shaped it for both better and worse (depending on whether the organization aided or hindered its mission). A listing of the most notable organizations appears in table 3. Those most involved in development of ORS are described below.

As evidenced throughout this chapter, the organization most responsible for ORS was the Office of Force Transformation. It did so by initiating the ORS program in 2003 and the TacSat series of experiments beginning in 2004. Along with the office's director,

²⁹⁶ The formal role of the Executive Agent for Space is detailed in Department of Defense, "DoD Executive Agent for Space," Defense Directive 5101.2, June 3, 2003.

²⁹⁷ According to author interviews with former OFT staff on March 1, 2012 and March 29, 2012.

²⁹⁸ In the 2005 National Defense Authorization Act, ORS was defined by the following: "operationally responsive satellites carry payloads that do not exceed 5000 pounds, can be developed and acquired within 18 months, and are "responsive to requirements for capabilities and the operational and tactical level of warfare."

²⁹⁹ John Shaud, *In Service to the Nation: Air Force Research Institute Strategic Concept for 2018-2023* (Maxwell Air Force Base, Alabama: Air University Press, 2009), 41.

the OFT staff helped to grow the ORS concept, partnering with others, and demonstrating its utility to key stakeholders in the department and Congress. At any given time, two or three OFT staff were involved with the program, although much of OFT's staff were responsible to advocating on its behalf. The ORS program was managed by a military officer on rotation in OFT and these enterprising officers were credited by colleagues as being a primary reason for the program's success.³⁰⁰

The office operated with both the advantages and disadvantages of autonomy (as discussed in the previous chapter), providing it some latitude and flexibility but also drawing hostility from some parts of the bureaucracy. In particular, the Air Force was not very receptive to the ORS initiative given that it challenged their traditional space capabilities. This was evidenced in their reluctance to grant use of launch facilities for the TacSat experiments.³⁰¹

A large part of the success of ORS was OFT's partnering with other organizations to rapidly develop the capability. Indeed, key to its success was building service laboratory relationships and spurring development in private sector. For example, the development of the standard bus was a multi-phased effort involving the Air Force Research Laboratory (AFRL), the Naval Research Laboratory (NRL), and Air Force Space and Missile Systems Center.

³⁰⁰ According to author interviews with former OFT staff. LtCol Jay Raymond was cited by most as the officer most responsible for the program's success given his background in the Air Force space community.

³⁰¹ According to author interviews with former OFT staff on March 1, 2012 and March 29, 2012.

Institutions

In addition to the individual and organizational actors involved with the development of ORS, there were also large institutions that had a stake in and influenced its development. Chief amongst them were Congress and the defense industry. As an institution, Congress took interest in the program as a way of hedging against perceived threats (from China and others) to U.S. space capabilities. It was instrumental in holding regular hearings on the subject, allocating funding specifically for ORS development, and establishing the ORS joint program office in the 2007 National Defense Authorization Act (NDAA). Members of Congress particularly interested in ORS included Senators Jon Kyl and Richard Shelby and former ranking member of the Permanent Select Committee on Intelligence Representative, Jane Harman, and then Chairman of the Strategic Forces Subcommittee, Representative Terry Everett. Their motivations for supporting ORS ranged from hawkish positions on national security matters to seeing ORS assets moved to their districts. Regardless of the motivations, Congress's role in ORS could be assessed as positive given its ongoing interests and support for program funding.

Another major institution involved with ORS development was defense industry. Given that it was responsible for actually developing the technology, it was important that they were a part of the effort. The industry played a part by helping to convey the ORS concept through industry publications and through various industry conferences and forums. Most notably though, key companies SpaceX and AirLaunch LLC played an instrumental role in delivering launch vehicles in a timely and affordable fashion. This was an essential part of the ORS program. For all of their efforts in assisting OFT in

realizing its vision, industry benefited too. Specifically, SpaceX established itself as a key player in the industry through its relationship with OFT and the ORS program. However, unlike Congress which clearly played a positive role in advancing ORS, the defense industry was more of an enabler, benefiting from OFT/ORS more than assisting them.

3. Resourcing ORS

The ORS program experienced steady funding increases from 2003-2006 under OFT (see figure 6). Beginning in 2003, the program received \$5 million in funding which swelled to over \$40 million in 2006—roughly doubling annually. The TacSat program was the focus of the initial funding but the ORS program also involved the development of the standard bus whose funding expanded over the same period. OFT's TacSat funding dipped in 2005 as other partners picked up the bill. Congress then supplemented OFT's funding of it in 2006 as its funding again climbed.

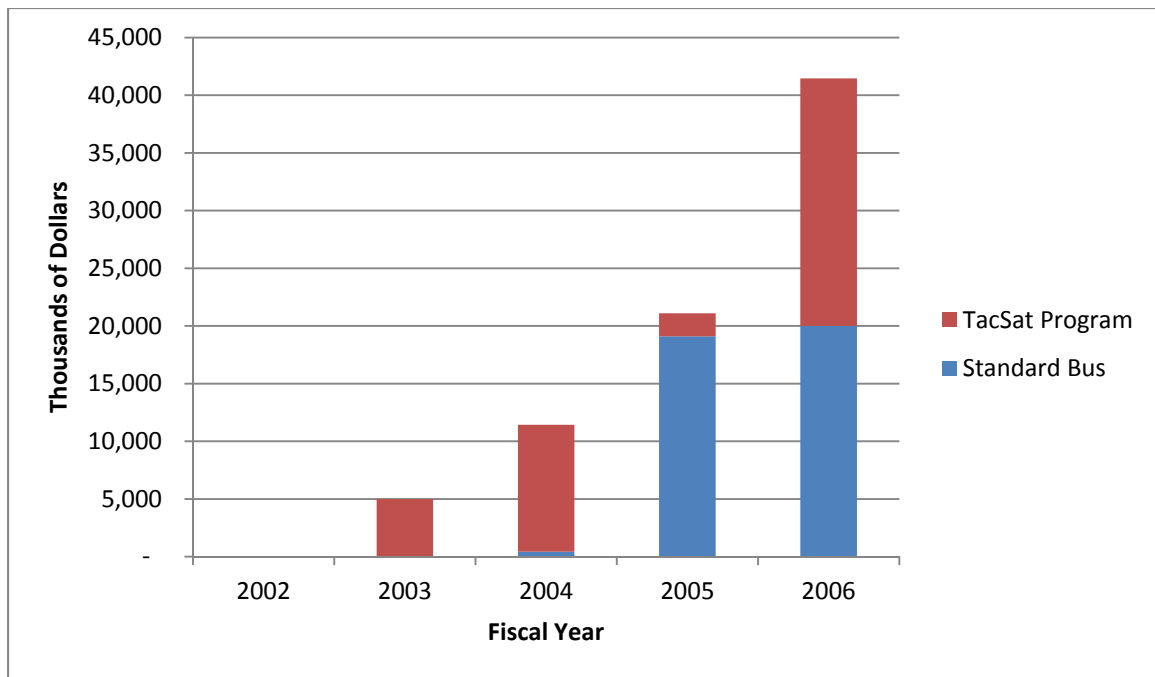


Figure 6: Operatively Responsive Space Funding, Fiscal Years 2003-2006

Another important component of the resources allocated to ORS was the staff required to execute the program. At any given time, there were approximately two to three OFT staff assigned to the program. These were fully-funded civilian/military personnel and did not require funding from the program. There was additional staff involved in the partner organizations (NRL, AFRL, etc.) and also with defense contractors developing launch vehicles, etc. for the program. The personnel at these contractors were paid for by ORS program funding.

4. Challenges Encountered

Advancing a new business model for space in pursuit of ORS was not a simple task, and it faced several challenges—some technical, others bureaucratic. One major

challenge the program encountered was lack of access to a low-cost, small launch vehicle to deliver TacSat into space.³⁰² ORS needed a platform that was under \$10 million during a time when the average cost of a launch vehicle was between \$16 million and \$33 million. The traditionally high cost of launch was associated with the economy of scale and that added satellite capability resulted in additional weight that drives the launch costs. This challenge was addressed by working with SpaceX to develop a low-cost launch solution (that was eventually deployed, but not for TacSat due to program delays).

Another challenge was the uncertainty in short-term funding. While TacSats 1 and 2 were funded with initial increments, the future of funding for the series was less certain. Indeed, DoD trimmed back its funding of the program and relied on Congress to pick up the remainder. This made planning the remainder of the series—TacSats 3 and 4—difficult since the resources required were not guaranteed.

A final encumbrance of the ORS program was its lack of clear strategy or direction in the early years. Although OFT spearheaded the initiative, there were many actors (as identified above) who had a role in the planning process further confusing who might be responsible for developing the needed vision or strategy to promote the initiative.³⁰³ There were at least five organizations nominally responsible for ORS planning, but none took the lead in articulating a clear strategy. These actors were the National Security Space Office, U.S. Strategic Command, Air Force Space Command, and Space and Missile Systems Center. The diffuse responsibilities made program

³⁰² GAO, “Space Acquisitions,” 12.

³⁰³ Ibid., 16.

development opaque given it was unclear who was doing what, where the gaps were, or the approach for bringing the concept together.

The forces complicating the future of ORS were not only internal or technical. Rather, some of these factors were external shocks that created pressures on the program. One such external shock was mounting evidence that China was developing anti-satellite capabilities and this was punctuated by the eventual ASAT launch in January 2007. The early indications of a capability that could put U.S. satellites at risk led many inside and outside of the space establishment to consider options for reducing U.S. vulnerability to attack. A leading way of doing this was to develop a viable capability to rapidly replace the assets—a foundational precept of the ORS program.

C. Beyond OFT: The Establishment of the Operationally Responsive Space Office

Despite the progress it made advancing ORS, the disestablishment of OFT ended its involvement with the endeavor. As with other OFT initiatives, ORS was transitioned to other organizations for execution. However, this transition began before a decision to close OFT was made and involved the participation of several key actors, some external to DoD.

1. Transitioning the Program

With the interest in tactical satellites generated by OFT and Admiral Cebrowski, a number of key *customers* began requesting the new capabilities that ORS promised. In particular, the U.S. Combatant Commanders (led by Strategic Command) saw a huge

need for ORS in supporting their operations.³⁰⁴ This was because the program promised unique capabilities delivered to the tactical and operational commanders on a timeline previously unachievable in the area of space acquisition.

Congress took note of this emerging demand for the capabilities and included language on the management of the program beginning with the fiscal year 2006 NDAA.³⁰⁵ The act called for consolidation of the payload portion of the program and also the evaluation of how to create a single office for managing the TacSat program. Specifically, the legislation called on the Secretary of Defense to “submit to the congressional defense committees a report providing a plan for the creation of a joint program office for the Tactical Satellite program and for transition of that program out of the Office of Force Transformation and to the administration of the joint program office. The report shall be prepared in conjunction with the Department of Defense Executive Agent for Space (which is the Under Secretary of the Air Force).”³⁰⁶

With clear signals from Capitol Hill on the future of ORS, parts of the department began developing plans for implementing the requirement for a new ORS office. In early 2006, OSD began examining the creation of an office. Steven Huybrechts, director of space programs in OSD Networks and Information Integration, stated “the department is

³⁰⁴ “How Much for What?” *Aerospace Briefing* 3, issue 34, June 16, 2006.

³⁰⁵ Direction on specific elements of the ORS program appeared in prior year NDAA's but the FY 2006 NDAA was the first time language appeared pertaining to the management and consolidation of ORS with the intent of focusing and expanding the effort.

³⁰⁶ Fiscal Year 2006 National Defense Authorization Act, Public Law 109-163, January 6, 2006, Section 913 (b), p. 3408. Available at <http://www.dod.mil/dodgc/olc/docs/PL109-163.pdf>, last accessed August 2011.

in fact already acting to develop and assign this responsibility.”³⁰⁷ The Services too began to meet to determine how they might support a joint ORS initiative. Initial meetings in February 2006 were led by AFSPC and included representatives from the Combatant Commands and across the Military Departments.³⁰⁸

Congress’s support for the consolidation and extension of ORS continued with the FY 2007 NDAA that called for the establishment or designation of a single office to manage ORS.³⁰⁹ The goal was to create a single entity that could continue and expand the original initiative conceived of by OFT. It would serve as a focal point for related programs across the Services. In addition to creating the ORS office, the NDAA also exempted ORS from adherence to the department’s Joint Capabilities Integration and Development System (JCIDS). This is the process governed by the CJCS and his staff to develop military requirements for all weapons program. Although it is a prerequisite for any acquisition program, it was criticized by many as being too cumbersome a process that stifles innovation. Indeed, exempting ORS from JCIDS drew fans from all corners as defense industry supported both the creation of the office and its exemption from JCIDS. John Roth president of small satellite manufacturer MicroSat Systems argued that an ORS office is “absolutely a good thing for industry and it is good that it will not be stifled

³⁰⁷ John T. Bennett, “OSD to Tap One Office with Developing Low-Cost Satellite Efforts,” *Inside the Air Force*, March 17, 2006.

³⁰⁸ Victor See, “Tactical Satellite/Operationally Responsive Space,” *Naval Space Outreach Message*, email distribution list, February 2006.

³⁰⁹ Rati Bishnoi, “Conferees Want Single Office to Manage Small Satellite Technology,” 2005. See also Fiscal Year 2007 National Defense Authorization Act, Public Law 109–364, October 17, 2006, Section 912, p. 2355. Available at <http://www.gpo.gov/fdsys/pkg/PLAW-109publ364/pdf/PLAW-109publ364.pdf>.

by 'same level of scrutiny' that larger systems are in JCIDS.”³¹⁰ Opposing the JCIDS exemption though was DoD, which opposed it on the grounds that it would “prevent the Joint Requirements Oversight Council from executing its responsibilities to validate and prioritize all joint warfighting requirements.”³¹¹

The legislation called for the creation of a new office that would report directly to the Executive Agent for Space. This was because some Pentagon leadership saw it as a way to expand the limited portfolio of the executive agent.³¹² In addition, the Under Secretary at the time, Ron Segal, was eager to take on the new role. There were several reasons reported for why OFT was not assigned the role of establishing or managing the new office. First, according to one congressional aide, members recognized that it was not the role of OFT to oversee such large endeavor. The aide stated, “We all know they [OFT] are not supposed to execute these programs.”³¹³ Next, many staffers and members of Congress had heard reports that OFT might be closed and didn’t want the new ORS office to be marginalized as a result. A final reason Congress didn’t hand the new ORS office off to OFT is that there was some disappointment with OFT the year prior. For example, one aide indicated “we don’t see much activity this year. There seems to be a lot of flailing about.”³¹⁴

³¹⁰ Rati Bishnoi, “Senate Authorizers Want JCIDS Exemption for Tactical Satellite Office,” *Inside the Pentagon*, May 18, 2006.

³¹¹ Department of Defense Appeal, FY 2007 Defense Authorization Bill, July 17, 2006.

³¹² “ORS Tug of War,” *Aerospace Briefing* 3, issue 32, May 2, 2006.

³¹³ Ibid.

³¹⁴ Ibid.

Although the new ORS office was assigned to the Air Force, it drew some opposition from within the Service. Some of the opposition was across the different communities that comprise the Air Force. In particular, the fighter and bomber communities were not supportive of ORS because they didn't understand the concept or how it would benefit them.³¹⁵ Opposition such as this swelled to the extent that the Air Force considered not programming for (or funding) the new office, instead forcing OSD to come up with the resources.³¹⁶

After getting beyond the initial opposition within the Service, the Air Force stood up the ORS office at Kirtland Air Force Base in Albuquerque, New Mexico on May 21, 2007. This was after several members of Congress jockeyed for the new organization to be located at installations in their districts. Most notably, a congressional delegation from Alabama led by Senator Richard Shelby tried to get it located at Redstone Arsenal.³¹⁷ Eventually, for a variety reasons, the office ended up in New Mexico co-located with several other Air Force assets. It was originally staffed with twenty billets (or government personnel).

The new ORS office developed a three-tiered strategy for enhancing U.S. space capabilities that has endured since its inception.³¹⁸ The first tier involved finding new missions for existing space systems. These activities looked at the current inventory of

³¹⁵ "How Much for What?"

³¹⁶ Ibid.

³¹⁷ Richard Shelby, Jeff Sessions, Terry Everett, Bud Cramer, "Letter to Secretary of Defense Donald Rumsfeld," September 29, 2006.

³¹⁸ Stephen Clark, "Experimental TacSat Craft Struggling to Reach Space."

spacecraft and considered ways of re-tasking them to be more responsive to joint operational commanders. The second tier focused on selecting, integrating, and launching payloads within weeks (as opposed the more conventional timeline of months or years). The last tier of the strategy was aimed at developing the ability to procure new technologies or create a new sensor within a year. The second and third tiers of the strategy continued OFT's original goal of ORS—to more rapidly field space capabilities that were responsive to joint commanders' needs.

2. Developments Since OFT Disestablishment

The primary development in the ORS program after the disestablishment of OFT in October 2006 was the creation of the aforementioned ORS program office. However, along with the new program office, OSD also remained engaged in promoting ORS. It did this through representation on the office's executive committee where the director of RRTO (a part of the Defense Research and Engineering directorate) represented OSD interests. RRTO was influential through its funding of key ORS enabler activities including: the ORS payload initiative, developing standards for bus-payload interfaces, network-centric tasking and dissemination interfaces, and enhancements to TacSat-1 from TacSat-2 operations.³¹⁹

Also occurring after the closure of OFT was the launching of three of the four TacSat missions. TacSat-2 was the first to be launched in December 2006. It was

³¹⁹ Rapid Reaction Technology Transition Office, "Operationally Responsive Space," undated background briefing, slide 13.

followed by TacSat-3 in May 2009 and TacSat-4 in September 2011.³²⁰ All of these satellites owed their existence, at least in part, to initial OFT funding and coalition-building which brought key sponsors together. The OFT-inspired TacSat series also gave rise to a second series of small satellites launched by the ORS office. Named ORS 1-4, respectively, the series was aimed at directly addressing requirements from U.S. Combatant Commanders around the world.³²¹ For example, ORS-1 carried a spy camera similar to the U2 spy plane and was an urgent request of U.S. Central Command to support operations in Iraq and Afghanistan.³²²

During this same period of time, Operationally Responsive Space saw its funding increase from 2007-2012 (see figure 7).³²³ Air Force funding of ORS rose from \$42 million in 2007 to over \$110 million in 2012, peaking at \$228 million in 2009. Over that period, the actual funding level exceeded the original budget requests by the Service. Consistent budget growth during this time belied the increased budgetary pressures facing the rest of the department. In fact, the ORS office survived several rounds of cuts since its goal was delivering low-cost alternatives to larger satellites.³²⁴

³²⁰ TacSat-1 was never launched due to repeated delays with its launch vehicle.

³²¹ For more information about the ORS series, see U.S. Air Force, "ORS Fact Sheets," available at <http://ors.csd.disa.mil/fact-sheets/index.html>, last accessed August 2012.

³²² Erik Schechter, "Congressional Rescue: Advocates Find Funding for First Responsive Satellite," *C4ISR Journal*, September 1, 2009.

³²³ Based upon program element 0604857F in Department of the Air Force, "Fiscal Year 2008 Research, Development, Test and Evaluation (RDT&E) Funding," February 2007-2012, pages F-4 – F-6. Available at http://comptroller.defense.gov/Docs/fy2008_r1.pdf, last accessed August 2011.

³²⁴ Stew Magnuson, "Air Force Embraces Small Satellites As Budget Outlook Grows Dim," *National Defense*, July 2011.

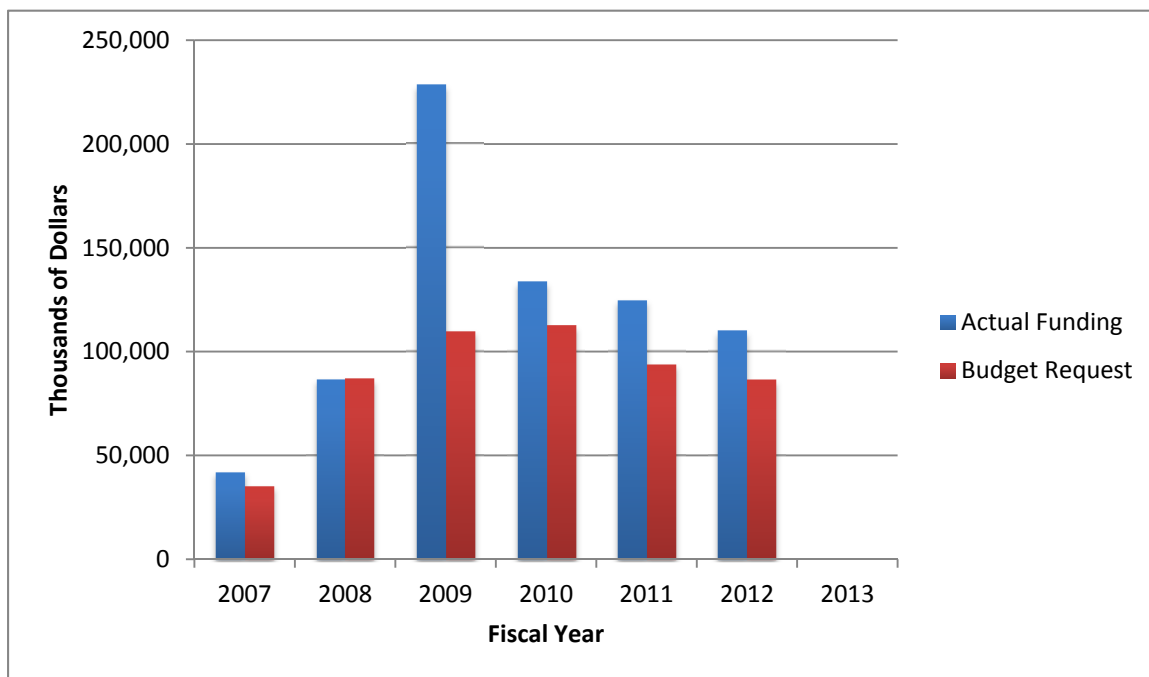


Figure 7: Air Force Funding of Operationally Responsive Space

Despite surviving successive rounds of threatened cuts, the fiscal year 2013 budget closes the doors on the ORS office, cuts its funding, and diverts remaining resources to other Air Force offices.³²⁵ This, part of a budget proposal that both the Pentagon and the Air Force supported, furthering the skeptical views of some that Services invariably scuttle anything that challenges traditional equities (i.e., big space)

³²⁵ At the time of writing, the authorization had not yet been passed by both chambers nor signed by the President but the decision to close the office is documented in Senate Bill 3254, National Defense Authorization Act for Fiscal Year 2013.

within the Air Force.³²⁶ The House Armed Services Committee's Subcommittee on Strategic Forces did attempt to preserve funding for the office, but failed. Even with these cuts on the hill, other Services (e.g., the Army) worked to expand their operationally responsive space initiatives to provide timely, low-cost, access to space for the warfighters.³²⁷

D. Evaluation of OFT's Operationally Responsive Space Program

As described in Chapter Two, the study's research question will be addressed by evaluating the performance of OFT first by applying the evaluation criteria of productivity, effectiveness, and impact to each of the selected cases and then reflecting on the office's performance in aggregate. Each of the criteria is applied to the Operationally Responsive Space program initiated by OFT to evaluate its performance.

1. Evaluating the Productivity of the ORS Program

The first criterion, productivity, is essentially a comparison of the program input versus its output. The purpose is to assess the return on investment of ORS to determine whether it was worth pursuing. To weigh inputs versus outputs and judge whether a program was productive requires identifying the types of both that are relevant to the office. Examples of types of performance inputs include (1) level of program funding

³²⁶ Stephen Clark, "White House Budget Would Cut Military Space Research," *Spaceflight Now*, February 13, 2012, available at <http://spaceflightnow.com/news/n1202/13afbudget/>, last accessed August 2012.

³²⁷ Amy Butler, "Army Eyes Ambitious, Cheap Satellites and Launchers," *Aviation Week and Space Technology*, August 27, 2012, available at http://www.aviationweek.com/Article.aspx?id=/article-xml/AW_08_27_2012_p26-488720.xml, last accessed August 2012.

over time, (2) staff/manpower equivalents dedicated to each effort, (3) amount of leadership/management time or energy.

The first example of a productivity input is program funding over time. Measuring ORS funding is somewhat complicated given that it transitioned from OFT to the Air Force and also had related initiatives (such as launch vehicles) funded by other organizations. However, simply examining the OFT funding for ORS from 2003-2006 and then the Air Force program element from 2007-2012 captures a majority of the funding and the general trend. From 2003-2012, annual funding climbed from approximately \$5 million to over \$110 million annually, peaking at almost \$228 million in 2009 (see figure 8). The total ORS funding over this period was approximately \$800 million—\$78.9 million while OFT led the effort and \$726 million under the Air Force.

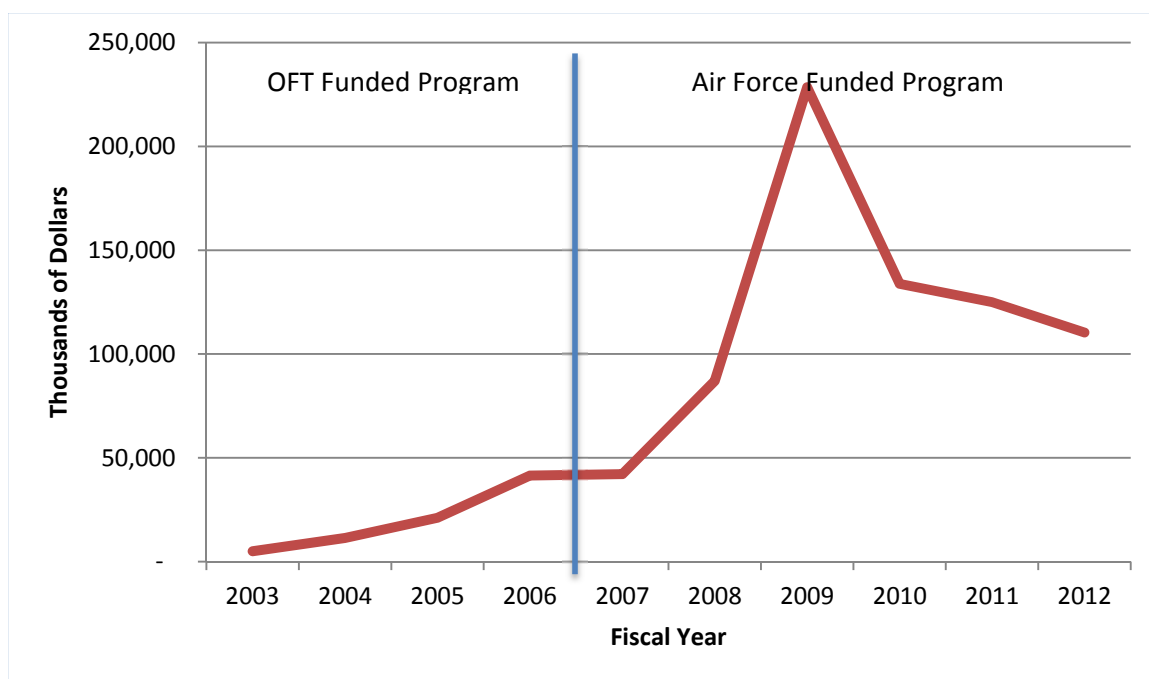


Figure 8: Funding for Operationally Responsive Space, Fiscal Years 2003-2012

Another program input was the amount of staff required to support the ORS program. This gives an indication of how labor intensive it was and is also a reflection of the resources required to administer the program. Under OFT, ORS was managed by two or three people at any given time. The Air Force ORS program office was stood up with twenty personnel and grew over time.³²⁸ These figures are based upon program officers involved with overseeing program development and do not include the dozens of people involved with the development and fielding of ORS capabilities.

³²⁸ The difference in OFT and Air Force staffing of the ORS program mirrors roughly tenfold increase in funding that the program experienced when it transitioned to the Air Force—the staff increased by a roughly commensurate amount.

A final input metric considered is the amount of leadership time required to advance the initiative. Given the breadth of portfolios of senior leaders in the department, their time is one of the most valuable commodities. Furthermore, it is typically a prerequisite for success and needed to overcome bureaucratic resistance. By all accounts, Secretary Rumsfeld invested little or no time advancing ORS—mention of it does not appear in any of his major speeches and key staff involved could not cite an instance where Rumsfeld was engaged.³²⁹ Conversely, Admiral Cebrowski invested considerable time promoting ORS—from helping to shape the concept to promoting it throughout the community.³³⁰ Although it is difficult to estimate how much time he spent on ORS, it was clearly one of his top priorities while director of OFT.

The preceding inputs into the ORS program must be weighed against its outputs to render some judgment on the program's productivity. Examples of program outputs used to determine productivity include: (1) new capabilities resulting from a program, (2) the innovation of a resulting capability, (3) resulting force structure or Service program change, (4) changes in business processes or concepts.³³¹

The first ORS output, new resulting capabilities, can be measured in terms of the number of satellites developed under the program. Since its inception in 2003, the ORS program has yielded eight satellites—four TacSats were the direct result of early OFT efforts while the subsequent ORS series of four satellites was developed under the Air

³²⁹ According to author interviews with former OFT and OSD personnel January 2012 – February 2013

³³⁰ Ibid.

³³¹ For the purposes of this study, “capabilities” are the ability to achieve specified military objectives and may come in the form of military technology or changes in tactics or doctrine.

Force program office. The eight satellites produced in 9 years is an unprecedented speed of delivery, especially when compared to conventional satellites that take years to develop and deploy. Furthermore, the average cost of military satellites is approximately \$1 billion per satellite while total ORS funding from 2003-2012 (approximately 800 million) resulted in a significantly lower average per unit cost of approximately \$100 million per satellite.³³² In addition, a fraction of these ORS funds was allocated to other initiatives only indirectly related to deploying the satellites.

A second ORS output was the innovation of the resulting capability itself. That is, the improvement of the new capability over the systems it is designed to replace. Although there were arguably several innovations of the ORS satellites, the most prominent were the introduction of the standard bus and the operational orientation of the satellites. A satellite's bus is the physical and electrical structure that carries and supports a payload of sensors or other items in space, akin to a school bus where passengers are the payload and the vehicle is the means of transportation. The modular bus developed for the TacSats permitted a plug and play capability that allowed them to be fielded more quickly rather than customizing each of the satellites from start to finish. In addition, the fact that the ORS satellites were developed for and responsive to the needs of the operational commanders provided a leap in capability over existing assets controlled by national command authorities and with competition across government for their tasking. A final innovation in the capability resulting from ORS is in the concept for employing

³³² For a survey of recent military satellite program costs, see U.S. Government Accountability Office, "Satellite Acquisition Programs," GAO Report GAO-03-825R, June 2, 2003, Appendix 1 available at <http://www.au.af.mil/au/awc/awcgate/gao/d03825r.pdf>.

the satellites. Indeed, it is believed by some experts that the most significant changes from tactical satellites will come from the concept of employing responsive space assets.³³³

The ORS program did not result in any permanent changes to force structure but did succeed in altering the Service programs. It accomplished this most notably when the program transitioned from OFT to the Air Force resulting in an ORS program office at Kirtland Air Force Base. The new office was initially funded at \$42 million/year with twenty billets for staff. It was funded through a new program element in the Air Force budget. The program also had an indirect effect on other Services as well with the Army indicating it intends to establish an Operationally Responsive Space office to address some of its satellite needs.

A fourth output of the ORS program is the change in processes for generating satellite capabilities. Developing new business models was one of OFT's primary objectives in advancing ORS and it accomplished this. As some observed, ORS pursued a "fundamentally different approach to spacecraft acquisition" and generated a "more dynamic acquisition environment" thus permitting the introduction of incremental improvement in capabilities.³³⁴ Through this new approach, ORS was able to demonstrate to the community the ability to rapidly develop satellites. The TacSats were developed in

³³³ Ackerman, "Small Satellite Offers Glimpse of the Future."

³³⁴ Zoe Szajnfarder, Matthew Richards, and Annalisa Weigel, "Implications of DoD Acquisition Policy for Innovation: The Case of Operationally Responsive Space," Proceedings of the American Institute of Aeronautics and Astronautics, paper presented at the AIAA Space Conference, September 9-11, 2008, San Diego, CA, pp. 1 and 11.

eighteen months or less when compared to traditional satellites that take 3-5 years or longer to develop.³³⁵

2. Evaluating the Effectiveness of the ORS Program

Another measure of program performance is the extent to which it achieves the goals of an organization, otherwise defined as effectiveness.³³⁶ This is ultimately a judgment of the investigator based upon data that is analyzed. The determination of whether goals are met can be based upon either prescribed or derived goals.³³⁷ Prescribed goals are those organizational or program goals that are clearly advertised and stated in documents or public pronouncements. Derived (or functional) goals are developed by the researcher from a variety of sources based upon logical consistency.

The ORS program developed by OFT was established to achieve several of the department's prescribed goals. As discussed above, the program was designed to achieve several of the operational goals outlined in the 2001 *QDR*. The goal most directly supported by ORS is "enhancing the capability and survivability of space systems and supporting infrastructure."³³⁸ Of the remaining five *QDR* goals, ORS was intended to directly support at least three of them.

The program's support of defense strategy does not end with the 2001 *QDR*. It endures today as ORS reinforces several of the key tenets outlined in the most recent

³³⁵ Dewey and Bishop, "Common Data Link from Space."

³³⁶ See Brewer and Selden, "Why Elephants Gallop," 689 or Seashore and Yuchtman, "A System Resource Approach to Organizational Effectiveness," 891-892.

³³⁷ Seashore and Yuchtman, "A System Resource Approach to Organizational Effectiveness," 893.

³³⁸ *Quadrennial Defense Review Report* (2001), 30.

articulation of national strategy. In January 2012, President Obama and Defense Secretary Leon Panetta jointly presented the defense strategy—*Sustaining U.S. Global Leadership*—the first time in decades the White House unveiled a defense strategy alongside the Pentagon.³³⁹ In the strategy, developing approaches to hedge against China’s improving military capabilities was a stated priority.³⁴⁰ As previously introduced, Congress saw this as a major reason for supporting ORS—to develop responsive space technologies that could counter China’s growing anti-satellite capability.

Although it is clear that the ORS program supports several key tenets of the defense strategy (both past and present), the extent to which it achieves these goals is less so. One reason for this is that the goals, as articulated in the strategies, are virtually impossible to gauge progress against because they are vaguely written. This permits any initiative aimed at accomplishing the goal to achieve it, at least in part. Another reason why it is difficult to determine whether ORS achieves the goals is because many of the capabilities it spawned (such as the TacSat and ORS series of satellites) are still in their infancy and do not have a record against which to evaluate their performance. Furthermore, the overall ORS initiative gave rise to a new business model for rapidly developing and deploying space capabilities and it will take time to determine whether it takes hold. Therefore, ORS should be evaluated favorably when judging its effectiveness but a definitive determination will take several years to make.

³³⁹ *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*.

³⁴⁰ *Ibid.*, pp. 2-3.

3. Evaluating the Impact of the ORS Program

The final measure of performance assessed by this study is the impact or endurance of a program.³⁴¹ That is, the longer-term result of the initiative and the lasting effect it had. This reveals whether a program is deemed valuable outside of the original sponsoring organization—OFT. A program’s endurance can also be measured by the form of the initiative (sponsorship, size of program, etc.).

The greatest evidence of the endurance of ORS was its transition from OFT to the Air Force as an independent program office. Had the program been of limited utility or impact, it would have almost certainly withered away as OFT’s closure became imminent. However, the opposite occurred as Congress got involved and established the office to which OFT’s TacSat series transitioned and was continued under the ORS series. Furthermore, funding and staffing increased considerably with this transition, further evidence of the enduring nature of ORS. Even with the apparent cancellation of ORS funding under the FY 2013 defense authorization act, other Services such as the Army are looking to continue or expand their operationally responsive space initiatives.

Another important impact of the ORS initiative was that it sped the development of small, rapidly deployable satellites. The space domain had long been dominated by the interests of big space and had scuttled previous attempts to introduce more flexible alternatives to space capabilities. According to some of those interviewed for this study, DoD may never have aggressively pursued such capability without OFT’s prompting.

³⁴¹ Lyden, “Using Parsons’ Functional Analysis in the Study of Public Organizations,” 64.

However, a majority claimed that, although they believe operationally responsive space would have eventually been pursued, OFT sped up the process by ten to fifteen years.³⁴²

E. Summary

The concept of smaller, rapidly deployable satellites was not a new one when the Office of Force Transformation began promoting it in 2003. Indeed, there is a history of similar efforts that had failed to mature for a variety of reasons. What were new were the unique environment that existed in 2003, the vision and commitment of key stakeholders, and the existence of an independent office capable of advancing the concept.

Operationally Responsive Space began as an OFT initiative but evolved into something more. Admiral Cebrowski and his staff developed the concept and brought together key actors to demonstrate a transformational capability that they eventually passed to the Air Force to pursue with a joint office. Based upon the criteria applied in this study—productivity, effectiveness, and impact—the ORS program performed well. It was a reasonably productive program generating a number of significant outputs for the modest amount of resource inputs (in DoD terms). One observer even called it one of America’s “best value defense systems.”³⁴³

Its effectiveness may take years to accurately gauge, but in terms of its alignment with office and departmental goals, ORS is highly effective. The final measure of performance—impact/endurance—also shows the success of OFT’s ORS concept given

³⁴² Based upon author interviews conducted from January 2012 – February 2013.

³⁴³ Eric Sayers, “An Outer Space Defense Bargain,” *Armed Forces Journal*, October 2008.

that it resulted in a permanent program office, sped the development of future capabilities, and yielded two series of tactical satellites. Such gains led a congressional aide to state “I believe ORS is transformation. I believe ORS is the most important initiative in my fifteen years in space.”³⁴⁴

There were several reasons why OFT succeeded in advancing the ORS initiative and transitioned it to a joint program office. One reason was that the office carefully managed the requirements of ORS.³⁴⁵ That is, OFT clearly defined the parameters (such as cost, scale, schedule, and objectives) for ORS and determined what was achievable on the given timeline. It sought a solution that was *good enough* to address near term operational needs as opposed to a capability that would take many years to develop.

Another major contributor to the success of the ORS initiative was the unique leadership that OFT was able to provide, especially through its director, Admiral Cebrowski. Several participants involved with the program attributed its success to Cebrowski who: provided the initial impetus and garnered support from senior officials and Congress, negotiated customized launch arrangements with the Air Force, empowered other program participants to make key decisions, and fostered a culture of collaboration between his staff and participating organizations.³⁴⁶

A final contributor to the success of ORS were the unique organizational arrangements OFT created to develop it, as opposed to relying on traditional

³⁴⁴“Rethinking Responsive Space,” *Aerospace Briefing*, February 10, 2006. The congressional aide cited was Josh Hartman.

³⁴⁵ GAO, “Space Acquisitions,” 6.

³⁴⁶ *Ibid.*, 9.

organizational processes. Indeed, after OFT's experience with ORS, others observed that different types of organizational arrangements and relationships are required for innovative space development.³⁴⁷ That is because existing processes were not well-suited to deliver a new capability on the desired timeline. OFT was able to do this by generating a demand for ORS, developing flexible organizational arrangements across the community, and negotiating procedural exceptions with key stakeholders.

The preceding analyzes OFT's experiences with one of its leading initiatives to identify areas of strength, weakness, and overall performance. The following chapters apply the same approach to examining other leading OFT initiatives.

³⁴⁷ Szajnfarber et al., "Implications of DoD Acquisition Policy for Innovation: The Case of Operationally Responsive Space," 8.

CHAPTER SIX: CASE TWO—PROJECT STILETTO

OFT has experienced much success in its brief existence, catalyzing department efforts in such diverse areas as Operationally Responsive Space with its TACSAT initiative; exploring new ground with the innovative suite of lethal and non-lethal capabilities integrated into the Sheriff vehicle; and OFT's Stiletto boat is pushing new boundaries in hydrodynamics understanding and shipbuilding business models. These concept-technology pairings, tied to robust operational experimentation, are critical enablers for acquisition in the information age.³⁴⁸

Donald Rumsfeld, 2006
*Testimony before the U.S. Senate Armed
Services Committee*

Purchased by the U.S. Navy in March 1887 and then entering service in July 1888, the U.S.S. Stiletto was a privately built yacht that later became the country's first boat to carry an automobile (or self-propelled) torpedo.³⁴⁹ It was built with special customized characteristics (engine, hull form, etc.) that made the vessel both fast and versatile. After competing in a series of races, the boat was purchased by the Navy and converted to a missile boat for experimentation purposes. Through a series of trials and operations, the concept proved effective and, although Stiletto was soon retired, it gave rise to a series of successor torpedo boats with similar design characteristics. The boat

³⁴⁸ Donald Rumsfeld, Testimony before the Senate Armed Services Committee, Hearings on the Department of Defense Authorization for Appropriations for Fiscal Year 2007, S. 2766, February 7, 2006.

³⁴⁹ Larry Smart, "Evolution of the Torpedo Boat," *Military Affairs* 2 (1959): 100. See also, Richard V. Simpson, *Building the Mosquito Fleet: The U.S. Navy's First Torpedo Boats* (Mount Pleasant, SC: Arcadia Publishing, 2001), 38-44.

became the namesake of the modern Stiletto program—an experimental high-speed composite M-hull vessel developed by the Office of Force Transformation.³⁵⁰

OFT's Stiletto program was developed to address emerging operational needs, new security challenges, and to pair some of the office's concepts with new technologies. The operational demand came from Combatant Commanders who needed safer high-speed vessels for their operators. The changing security environment involved the dispersion of naval threats around the globe posed by swarming tactics and smaller watercraft. Finally, the new concepts involved distributed information paired with carbon construction and M-hull ship design. Former Navy commander and Stiletto program manager Greg Glaros noted that, "This isn't a story actually about the boat. The story is about distributed operations and how we bring together the disparate sensors that exist out there into some holistic point."³⁵¹

The following chapter analyzes OFT's experiences with one of its leading initiatives to identify areas of strength, weakness, and overall performance. It does so by examining the internal and external variables introduced in preceding chapters and the various actors involved with Stiletto development. The study's research question is then addressed by evaluating the performance of OFT by applying the criteria of productivity, effectiveness, and impact (as presented in Chapter Two) to Project Stiletto. Chapters Five and Seven apply the same approach to examining other leading OFT initiatives.

³⁵⁰ This connection between the historic and modern Stiletto was drawn by a number of former OFT staff interviewed between January 2012 – February 2013.

³⁵¹ "U.S. Poised for Innovative Ship Design Experiment," *Jane's Defense Weekly*, Nov 16, 2005.

A. Motivating Factors: The Genesis of Project Stiletto

As is the case with most military innovations, Stiletto emerged as a result of both internal and external factors. The primary internal (to DoD) motivator was the impact of high-speed maritime vessels on operators. Indeed, these watercraft (most notably the Mark V rigid-hulled inflatable boats (RHIB)) place great physical stress on their operators to the point of inflicting permanent bodily damage. As evidence of this, a Massachusetts Institute of Technology study showed that special warfare combat crew suffered almost one hundred percent injury occurrence rate as their time in the Special Boat Unit increased above ten years.³⁵² This is because the turbulence of the sea combined with the design of the vessel exposed operators to two ejection seat-like shocks every six to eight hours. Such conditions exacted a toll not only on individual servicemen but also on the organization which suffered from shortages of healthy operators. This is one the main reasons Admiral Eric Olsen, then commander of U.S. Special Operations Command, approached Admiral Cebrowski and OFT about alternative boat designs that might reduce bodily harm to operators.³⁵³

The primary external factor that helped give rise to Stiletto was the changing nature of maritime challenges around the globe. Increasingly, they were coming from smaller, not larger navies for which the U.S. Navy had prepared. An example of such threat is piracy, and the challenge it presents. Through 2007, approximately fifteen pirate

³⁵² “M Ship Aim: Safer Vessels for Special Ops,” *Maritime Reporter and Engineering News*, October 29, 2008.

³⁵³ According to an author interview with a former OFT program manager on March 28, 2012.

attacks each year occurred off Somalia; this grew to over twenty-four in 2008 and over fifteen a month by 2009.³⁵⁴ In addition to such non-state threats, some nation states have adopted small boat *swarming* tactics to defeat larger navies. Most notable among them is Iran, which is known to have a fleet of fast boats and has rehearsed swarming tactics in the event of a U.S. incursion. Despite these threats, many observers are concerned that the U.S. Navy is ill-equipped to deal with such diffuse threats. Retired Navy commander John Patch noted that "Terrorism, insurgencies, eight years after 9/11, the U.S. Navy is still not built and equipped and trained to deal with them."³⁵⁵ Stiletto was developed with such threats in mind and, according to some experts, provided an effective solution to them.³⁵⁶

B. Transforming DoD through Project Stiletto

To address the challenges of the changing global landscape and reduce bodily injury to operators of high-speed vessels, OFT pursued the development of a new, transformational naval capability. It did so to demonstrate the viability of a new capability and to provide a platform for further experimentation. The following outlines the development of Stiletto, the key actors involved, resources committed to it, and the major challenges it encountered.

³⁵⁴ Michael O'Hanlon and Stephan Solarz, "The Convoy Solution to Combating Piracy," *Washington Times*, May 11, 2009.

³⁵⁵ Drake Bennett, "The (Smaller, Faster, Cheaper) Future of Warfare," *Boston Globe*, April 19, 2009.

³⁵⁶ O'Hanlon and Solarz, "The Convoy Solution to Combating Piracy." See also "M Ship Co Launches Experimental Vessel for Special Operations and Littoral Warfare," *Business Wire*, January 31, 2006.

1. Development of the Program

Even before OFT began to seek out alternative naval architectures to reduce injury to operators and provide greater flexibility against new threats around the globe, San Diego's M Ship Co had developed a unique hull design for very different purposes. They designed a vessel with an M-shaped hull (where the underbelly of the vessel was contoured like the letter *M*) in response to Venetian requests for a ferry that produced little or no wake. This was to reduce erosion along the city's canals caused by conventional hull types.

Not long after M Ship Co delivered this novel watercraft to the Italians, OFT's Admiral Cebrowski became acquainted with the company through a long-time close colleague of his, retired Admiral William Owens.³⁵⁷ Owens was familiar with M Ship Co and their M-hull design through the company's cofounder, Charles Robinson, with whom he served on a corporate board. After an introduction to Robinson and M Ship Co's innovative architectures, Cebrowski and his staff believed they might be able to design a vessel to address the needs of Admiral Olsen and others—a high-speed craft that reduces operator injury and provides greater flexibility against smaller vessels. M Ship Co's other cofounder, Bill Burns recalls shortly after the meeting, Cebrowski approached them and said, "If you guys can build a Navy ship in less than a year, prove that it can go fifty

³⁵⁷ Based upon an author interview with a former OFT program manager on March 28, 2012. This connection between Cebrowski-Owens-Robinson was corroborated by others interviewed.

knots, have shallow draft, have a smooth ride quality, and use advanced materials, like composites, I'll give you some money to do that.”³⁵⁸

From that point, until the contract was awarded, OFT worked to develop a team of interested parties who would share the development cost and also have a stake in the vessel's application and evolution. The leading partner was the proponent for the new capability—USSOCOM—who signed a memorandum of understanding with OFT to jointly develop Stiletto. The Navy's Office of Naval Research (ONR) and Naval Undersea Warfare Center (NUWC), Newport were other key partners in the endeavor.

Once funding was in place, a contract was awarded to M Ship Co in September 2004 to develop Stiletto. M Ship Co immediately established arrangements with three other companies to assist with Stiletto's development: Knight and Carver Yacht Center (for ship construction), SP Technologies Ltd (for composites engineering), SAIC AMSEC (for marine engineering and navy technology support). Given the tight timeline, work commenced immediately although M Ship Co already had experience with both the M-hull and composite construction. What the rapid development cycle required was an innovative approach to testing. Rather than using traditional testing facilities or models that were either too costly or non-existent, M Ship Co conducted *virtual* testing and sea trials using mock-ups. The virtual testing involved computer simulations that tested various features of the vessel. The sea trials were performed using a 38-foot aluminum model towed behind a larger boat to test the dynamics of the double M-hulled Stiletto. It

³⁵⁸ David Gaines, “High-Speed Boat Brings New Wave of Special Operations Missions,” *Design 2 Part Magazine*, August 31, 2009.

is estimated that using these alternatives to traditional testing and analysis helped to cut the development time in half demonstrating the advantage of using *surrogates* in experimentation to speed development and acquisition of capabilities.³⁵⁹

In addition to traditional elements of ship design, another facet of the development process involved creating the ship's data bus for networked plug and play of communications, surveillance, and weapons systems—also known as the *electronic keel*. The electronic keel was designed by Azimuth Inc. and was comprised of one gigabit local area network and data storage. Its purpose was to monitor the health of Stiletto and bring together all the principal sensors and external data. The keel also permits connection to TacSat to beam real-time data and images to the ship. The unique capability allowed for rapid insertion of various sensors, communications devices, and weapons to be operated from the ship and information to be fused. The concept behind it was to use information and networking to provide Stiletto greater capability through better awareness of its surroundings (conditions, adversaries, etc.). The electronic keel was an important innovation OFT introduced to Stiletto not unlike the standard bus it developed for ORS. Its role in the operation of Stiletto was vital and a Navy officer very familiar with the vessel stated that, “The electronic keel is the Stiletto's heart, if not its very soul.”³⁶⁰

³⁵⁹ Geoff Fein, “M Ship Succeeds in Taking Stiletto From Concept to Trials,” *Space Daily*, March 16, 2006. See also GlobalSecurity.Org, “Stiletto Profile,” available at <http://www.globalsecurity.org/military/systems/ship/stiletto.htm>, last accessed December 2006.

³⁶⁰ Christopher Cavas, “The ‘Bat Boat’ Experimental Vessel Scares Off Drug Smugglers,” *Navy Times*, November 10, 2008. The comment was made by Greg Glaros, former Navy Commander and OFT program manager of Stiletto.

There was resistance to the concept of an all-composite ship the size of Stiletto. Many among the community of naval architects questioned the feasibility of carbon fiber based upon decades-old studies that exposed limitations of composites, which had since been overcome. To move beyond this long-standing resistance, OFT created a consortium of public and private participants with experience in carbon fiber. Called the Seaborne Composite Coalition, its purpose was to “advance the national competitive advantage of the United States in large-scale composite vessel construction” with the “intent to catalyze ongoing efforts within numerous innovative commercial and defense sectors that use composite construction techniques in maritime vessels.”³⁶¹

After a rapid development cycle, Stiletto appeared for the first time in public as it was unveiled January 15, 2006 at the Armed Forces Communications and Electronics Association Conference in San Diego. The ship measured eighty feet in length and forty feet across (see figure 9). It is made entirely of carbon/epoxy and has two thousand feet of interior space, which include the boat launch for either a rigid inflatable boat or an unmanned maritime system. Stiletto has a normal draft of three feet and can reach a top speed of fifty knots.

³⁶¹ Jason Updegraph, “Advancing Intermodal Mobility: Seaborne Composite Coalition” (presentation, Product Design and Materials Technology Panel Meeting, July 21, 2005). The coalition was led by California State University, Long Beach which was an established research leader in the field.



Source: Mshipco.com

Figure 9: Stiletto on Display During Port Call

Stiletto was officially delivered to OFT on May 1, 2006 at which point it was put immediately to work. Just a week after delivery, on May 8, Stiletto participated in a mine clearance operation exercise—*Howler*—with Naval Special Clearance Team (NSCT) 1. The exercise was a part of WolfPAC—a series of annual OFT-sponsored experiments that explored command and control of geographically dispersed by networked autonomous and semi-autonomous military forces. The purpose of *Howler* was to demonstrate the capability of Stiletto, explore the ability to incorporate multiple sensors, and assess the benefit of overlaying multiple sensor data on the fidelity of mine detection. Stiletto exceeded participants' expectations during the exercise and was shown to save

time at least fourfold during mine clearance operations leading one NSCT-1 member to say, “that’s a pretty important consideration.”³⁶²

Throughout the summer and fall, Stiletto continued to make port calls at selected locations and participate in smaller experiments. In addition, it continued to get outfitted with new gear. The largest exercise it participated in during that time was in June 2006 where Stiletto participated in Trident Warrior, a major multinational communications exercise. OFT continued to own and operate the vessel until the office was closed in October 2006.

2. Key Actors

Stiletto involved the interaction of a variety of key actors at three levels: individuals, organizations, and institutions. Table 4 provides an overview of the actors and their roles. Greater detail is provided on selected major actors below.

³⁶² Christopher Cavas, “A Flexible Stiletto: U.S. Packs Craft with Sensors and Networks to Test New Ideas,” *Defense News*, May 30, 2006.

Table 4: Stiletto Key Actors

Actor	Role
Individuals	
Director, OFT (Cebrowski)	Took interest in alternative hull designs and was responsible for initial funding and vision.
Commander, US Special Operations Command (Adm Eric Olson)	Saw an operational need for alternative high-speed vessel and partnered with OFT.
Co-Founder, M Ship Co (Charles Robinson)	Developed the M-hull concept and convinced Cebrowski/OFT of its utility.
Organizations	
Office of Force Transformation	Developed and managed the Stiletto program and worked to overcome bureaucratic resistance.
U.S. Special Operations Command (USSOCOM)	Responsible for managing special operations, one of the primary missions for which Stiletto was designed.
U.S. Southern Command (USSOUTHCOM)	The regional command that conducted most U.S. counterdrug operations, a mission for which Stiletto proved very effective.
Naval Research Laboratory	Provided financial support for Stiletto and technologies for testing and demonstration.
Naval Undersea Warfare Center (NUWC), Newport	Responsible for program management and contract support for Stiletto.
Rapid Reaction Technology Office	Assumed responsibility for Stiletto; continued its use as an experimental testbed.
Naval Surface Warfare Center Carderock Division (NSWCCD)	Served as the primary contracting organization and assisted with Stiletto design and development review.
Institutions	
Congress	Interested observer of Stiletto development.
Defense Industry	
M Ship Co	Developer of M-hull technology and Stiletto.
Azimuth Inc.	Developer of Stiletto's "electronic keel"
Knight and Carver	San Diego yacht builders responsible for constructing Stiletto.

Individuals

As was the case with ORS, the individual most responsible for Stiletto was the OFT's director Admiral Cebrowski. He had taken interest in alternative hull designs

dating back to his time as president of the Naval War College. Cebrowski developed what came to be called the *streetfighter* concept that conceived of the employment of a fleet of smaller, well-armed ships to better operate throughout the world's littorals. He was also credited for having given rise to what eventually became the littoral combat ship (even though Cebrowski would have likely disagreed with the final design and selection). For Stiletto, Cebrowski provided the vision, the funding and the initial guidance. As M Ship Co's co-founder, Bill Burns recalled, the director of OFT "wanted to push the limits of what we can do, and try things that haven't been done before."³⁶³

The Commander U.S. Special Operations Command, Admiral Eric Olson, was also an important individual responsible for furthering Stiletto. Given the missions for which his command was responsible, Admiral Olson was interested in affording the greatest protection to his special operators. As described above, this was difficult given the conditions in the existing high-speed vessels used by the operators (primarily, the Mark V RHIB). Therefore, Olson approached Cebrowski and OFT and expressed interest in developing a new capability that would "end the savage destruction of special operations teams on boats."³⁶⁴

A third individual responsible for Stiletto is the co-founder of M Ship Co, Charles Robinson. Although the San Diego-based company had a second co-founder, Bill Burns, it was Robinson who was the public face of the company and aggressively marketed the M-hull design to anybody who would listen. It was also through Robinson and his service

³⁶³ Gaines, "High-Speed Boat Brings New Wave of Special Operations Missions."

³⁶⁴ According to an author interview with a former OFT program manager on March 28, 2012.

on a corporate board with former Admiral William Owens that produced the initial contact with Cebrowski.

Organizations

The organization most responsible for advancing Stiletto was the Office of Force Transformation. After all, it was from this office the initial concept came along with pairing Stiletto with other concepts and technologies such as WolfPAC and the electronic keel. Although Cebrowski provided the initial impetus for Stiletto, it was the OFT staff that was most directly responsible for managing and developing the program. The staff worked diligently to create a coalition of partners to develop Stiletto and a community to overcome resistance to composite construction.

Another organization responsible for the development of Stiletto was the Naval Undersea Warfare Center (NUSWC), Newport, Rhode Island. This U.S. Navy component was responsible for program management and contract support for Stiletto. It integrated several elements of the early WolfPAC concept to include WolfSim (a network simulator) and distributed forces experiments.

The Naval Surface Warfare Center Carderock Division (NSWCCD) also played a role in Stiletto. It was the primary contracting organization and provided both design review and oversight of Stiletto construction. It also had a role in development and execution of the testing plan and assisted with the planning for experimentation.

The Rapid Reaction Technology Office played as important a role in Stiletto development as OFT. Although it was OFT who launched the initial capability, it was RRTO that assumed responsibility for the program and served as its steward since 2006,

faithfully defending and allocating the resources Stiletto needed to continue its mission. Sustaining and promoting Stiletto was also well within RRTTO's mission of "accelerating the development and fielding of affordable, sustainable, transitional and nontraditional capabilities for the warfighter."³⁶⁵

Institutions

The first of two major institutions that played an important role in development Stiletto was the U.S. Congress. Key members over the years have been interested observers in the ship's emergence. Beginning with the congressional delegation led by Roscoe Bartlett (R-MD) which visited Naval Amphibious Base, Coronado, August 29, 2006, Stiletto hosted several interested delegations over the years. Congress has even used Stiletto as leverage against other Navy shipbuilding plans. For example, Congressman Duncan Hunter (R-CA) several times suggested that Stiletto was superior to LCS since it was both stealthy and fast. About Stiletto's stealth and speed, Hunter said, "If we aren't going to do that, then how are we going to touch people anyway."³⁶⁶ Over the course of the Stiletto program, Congress did allocate earmarks to specific elements of the program, such as the electronic keel.³⁶⁷

³⁶⁵ Walter Pincus, "Defense Department's Special Projects Program Features More Sophisticated Weapons," *Washington Post*, November 10, 2009.

³⁶⁶ "A Day Without Seapower and Projection Forces," Joint Hearing Before the House Armed Services Committee Subcommittees on Seapower and Projection Forces and Readiness, November 3, 2011, 22. See also, "The Future of the Military Services and Consequences of Defense Sequestration," Hearing Before the House Armed Services Committee, November 2, 2011, 39.

³⁶⁷ "Department of Defense Appropriations Act, Fiscal Year 2010," January 6, 2009, available at [http://tricare.mil/tma/congressionalinformation/downloads/2010113/HR%203326%20-%20DoD%20Appropriations%20Conference%20Rpt%20\(on%20HR%203326,%20Rpt'd%2016%20Dec%2009\)%20-%20P.L.%20111-118.pdf](http://tricare.mil/tma/congressionalinformation/downloads/2010113/HR%203326%20-%20DoD%20Appropriations%20Conference%20Rpt%20(on%20HR%203326,%20Rpt'd%2016%20Dec%2009)%20-%20P.L.%20111-118.pdf).

The defense industry was another institution involved in the development of Stiletto, but not in the monolithic sense that it is frequently involved with major weapons development. Rather, some of the industry's smaller participants were the key players in the design and manufacturing of Stiletto. As the developer of M-hull design, it was M Ship Co who played the largest role amongst industry. It was responsible for developing the design and serving as the prime contractor in the manufacturing of the vessel. Stiletto propelled M Ship Co into the limelight by attracting several major awards.³⁶⁸ In 2006, it was awarded Time Magazine's *Best Inventions* (in the Armed Forces category). The same year, it was awarded *Most Innovative Product of 2006* by CONNECT.

Notwithstanding this success, Stiletto remained a single copy, with no larger acquisition made by the U.S. military. This is despite M Ship Co's extensive lobbying to secure steady congressional funding for additional M-hull vessels. One reason for the company's lack of success is that it was at a disadvantage when lobbying for funding due to its smaller size; larger shipbuilders are typically more successful at receiving congressional funding.³⁶⁹ Another reason is that neither OFT nor RRTO shared M Ship Co's enthusiasm for additional vessels. Both were content with using it as an experimental testbed and leaving it to the Services to champion its further development.

³⁶⁸ For award details, see *M Ship Co Press Release*, November 16, 2006 and *M Ship Co Press Release*, December 19, 2006.

³⁶⁹ Roxana Tiron, "Experimental Shipbuilder Seeks Increased Congressional Funding," *The Hill*, April 19, 2007.

3. Resourcing Stiletto

Funding for Stiletto rose steadily under OFT's leadership. From 2004 to 2006, funding increased from slightly over \$2 million in 2004 to approximately \$5 million in 2006 (see figure 10).³⁷⁰ This initial funding was required to cover the capital investment involved with ship design and construction. Over this period, the total funding amounted to approximately \$13.5 million.

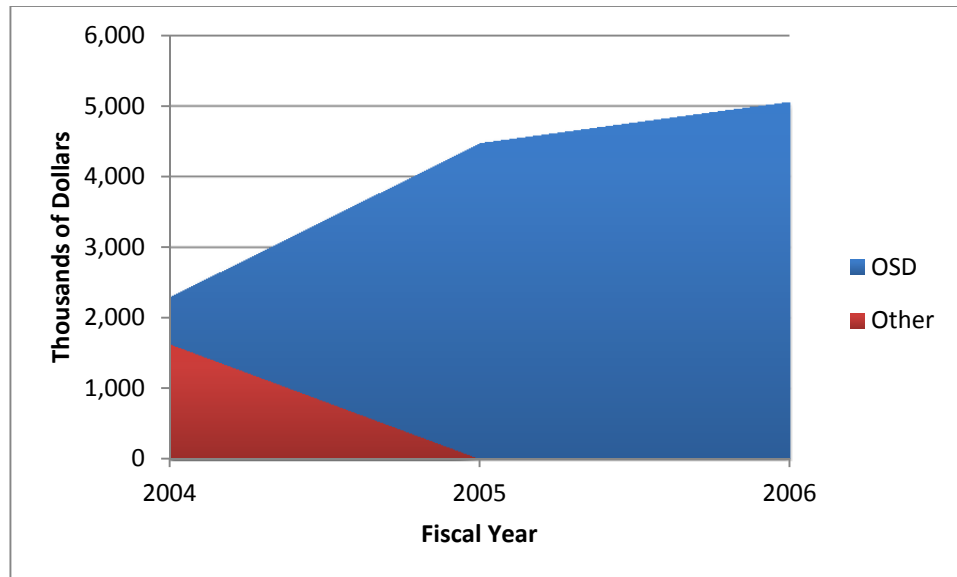


Figure 10: Sources of Stiletto Funding, Fiscal Years 2004-2006

³⁷⁰ Funding data for the figure came from Office of the Secretary of Defense Research, Development, Test and Evaluation (RDT&E) Budget Item Justifications, 2004-2006.

Although a majority of the funding during this time was from OFT, Stiletto also received contributions from other actors. For example, NUWC contributed \$400 thousand and USSOCOM, Stiletto's primary sponsor outside of OFT, contributed \$1.23 million.³⁷¹ Even though this funding amounted to only a fraction of the total cost of the program, the purpose of getting other contributors to share the cost was not to do so equally, but to obtain buy-in from other parts of the department.

4. Challenges Encountered

Despite OFT's apparent success in developing Stiletto and demonstrating its utility to the broader community, it was not without challenges. It experienced several over the years. The first challenge was the organizational resistance it received from the Department of the Navy. Dating back to his days as president of the Naval War College, Cebrowski encountered a Navy leadership which eschewed alternative hull designs and fleets of smaller vessels.³⁷² Indeed, the Navy has the reputation of being the most conservative Service and has traditionally been opposed to smaller surface combatants.³⁷³ This was evidenced by its initial ardent opposition to the M-hull design of the Stiletto—questioning the viability of such a design.³⁷⁴ However, the experience OFT (and

³⁷¹ These funding figures are from an undated OFT briefing circa 2004. It is estimated that these other actors may have contributed small amounts of funding in 2005-2006 but this data was not readily available.

³⁷² According to an author interview with a former OFT program manager on March 28, 2012. According to the respondent, senior most Navy leadership actively sought to kill alternative naval concepts such as streetfighter since the competed with traditional capital ship programs.

³⁷³ Bennett, "The (Smaller, Faster, Cheaper) Future of Warfare." See also David Eshel, "Small Boats Menace Littorals," *Aviation Week and Space Technology*, March 15, 2010.

³⁷⁴ Tiron, "Experimental Shipbuilder Seeks Increased Congressional Funding."

eventually RRTO) had with Stiletto served to demonstrate the utility of such designs to the Navy and could serve as an “agent of change” for the Service.³⁷⁵

Another major challenge encountered by OFT in its promotion of Stiletto was the natural bureaucratic culture that tends to militate against change in the department. M Ship Co’s Bill Burns observed an apparent risk aversion in DoD which slowed the acceptance of Stiletto and led him assert that, “To be able to manage and develop new concepts with the government you need to change the culture.”³⁷⁶ Organizational theorist Chris Argyris called these cultural behaviors that stifle learning *organizational defensive routines*. Such a defensive routine is “any policy or action that inhibits individuals or groups and organizations from experiencing embarrassment or threat and at the same time prevents actors from identifying and reducing the causes of embarrassment.”³⁷⁷ Edgar Schein identifies four common factors that permit an organization’s culture to overcome such barriers and innovate: 1) external pressures, 2) internal potentials, 3) response to critical events, 4) unpredictable chance factors.³⁷⁸ In the case of Stiletto, several of these factors were present given the external (threat) environment was necessitating change and that it was intended to respond to the critical event of the increasing toll existing platforms were taking on operators.

³⁷⁵ Matt Hevezi, “Stiletto—Unique Vessel Makes a Sharp Break with Past Practices,” *The Navy League of the United States*, October 9, 2006.

³⁷⁶ Fein, “M Ship Succeeds in Taking Stiletto From Concept to Trials.”

³⁷⁷ Argyris, *Knowledge for Action*, 15.

³⁷⁸ Schein, *Organizational Culture and Leadership*, 2nd Edition, 95.

A final, unavoidable challenge experienced by Stiletto was the passing of its primary proponent in Admiral Cebrowski and dissolution of the office that gave rise to it. Although all evidence suggests that RRTO became a good steward of the program and expanded it prosperously, questions remain about what could have happened to the program had Cebrowski remained at the helm. At least some accounts suggest that there might be more Stilettoes or that Cebrowski might have lobbied for their formal introduction to the force. For example, Burns noted that “If he [Admiral Cebrowski] were here today, you’d see a fleet of these in the water because they work really well.”³⁷⁹

C. Beyond OFT: The Evolution of Stiletto After OFT Disestablishment

Despite these challenges and others, Stiletto outlived the office that developed it. When the decision was made to close OFT, the DoD leadership determined it would transition its science and technology programs to other parts of the department, most of them going to RRTO. Once Stiletto was transitioned to RRTO, the office built upon the experiences of OFT and further developed Stiletto to become the experimental testbed that many argue Admiral Cebrowski had always intended it to be.

1. Transitioning the Program

In October 2006, with the closure of OFT, several of OFT’s programs and attendant funding were transitioned to RRTO. As part of the transition, RRTO assumed

³⁷⁹ “Serial Innovator Extraordinaire.”

responsibility for the Stiletto program.³⁸⁰ That year, Stiletto performed a variety of activities. It conducted naval architecture trials, supported multiple operational experiments (with USSOCOM, in particular) and participated in Navy exercise Trident Warrior 2007.

In 2008, Stiletto conducted 120 days of operation in support of experimentation for government labs, small business and academia. This included testing of unmanned systems, maritime domain awareness, sensors, portable communications, and situational awareness equipment. It also completed a sixty day joint deployment (with the Army, Navy, and U.S. Customs) to Cartagena, Columbia for operations and testing of over ten systems.³⁸¹ On its return, Stiletto intercepted a *go-fast* boat of suspected drug smugglers. It was able to do so after the boat tried to evade it in shallow waters, thinking that Stiletto could not follow them. However, after a two hour chase at over forty knots, Stiletto's crew seized the three smugglers and over 1800 lbs. of cocaine.

In 2009, Stiletto again conducted 120 days of underway operation in support of experimentation for government labs, businesses and academia. It also conducted a ninety day experimentation and counter-narcotics deployment to the Caribbean in support of Joint Interagency Task Force-South during the summer. While there, Stiletto participated in theater security cooperation activities in the Caribbean.

³⁸⁰ Except where otherwise noted, the following annual accomplishments are from the series of Office of the Secretary of Defense Research, Development, Test and Evaluation (RDT&E) Budget Item Justifications, Exhibit R-2, Fiscal Years 2007-2012.

³⁸¹ Cavas, "The 'Bat Boat' Experimental Vessel Scares Off Drug Smugglers."

During the next year, 2010, a material assessment of Stiletto was performed to develop options for future vessel utilization. The assessment determined experimentation was the best use of Stiletto. An upgrade of the electronic keel was completed to allow for easy and flexible adaptation and integration of C4ISR equipment. In addition, eleven technology demonstrations were completed and Stiletto was conducting them within six weeks of request (a responsiveness not seen by other government testing services).

In 2011, Stiletto completed twelve technology demonstrations with technologies including sensors, biometrics data links, radars, etc. It participated in the Irregular Warfare Innovation Cell's Blue Dragon demonstration—a technology demonstration project between the National Maritime Intelligence Center and NSWCs Combatant Craft Division. Stiletto also conducted continued testing in support of Combatant Commands and Services.

2. Developments Since OFT Disestablishment

Since the disestablishment of OFT in 2006, development of M-hull technology continued, but at a much slower pace. In 2007, M Ship Co received \$750 thousand from ONR to validate the design of Stiletto. This involved tank testing and a series of sea trials. It also included development of computational fluid dynamics tools for quantifying the tools' performance. Most naval technologies undergo testing of this sort before fielding but the costs are often too high for smaller developers without funding like this.

Also in 2007, M Ship Co hired a lobbyist and began lobbying Congress for additional funding.³⁸²

In 2008, Congress gave M Ship Co \$2 million to assist SOUTHCOM with rapidly fielding a demonstrator for the evaluation of a shock mitigating craft featuring advanced hull design and composite materials.³⁸³ In the same year, M Ship Co's co-founder, Charles Robinson, reached out to Secretary of Defense Robert Gates through a personal letter where he suggested that DoD procure a fleet of Stilettoes for tanker convoys.³⁸⁴

In 2009-2010, M Ship Co stepped up its efforts a number of ways. It began running advertisements in major industry publications advertising twenty-five Stilettoes could be purchased for the cost of one Littoral Combat Ship (a major Navy acquisition program aimed at improving brown water operations).³⁸⁵ In addition, M Ship Co continued to aggressively market Stiletto for a variety of other applications. For example, it marketed Stiletto to Customs and Border Patrol as *Sea Fence*.

D. Evaluation of OFT's Project Stiletto

As described in Chapter Two, the study's research question will be addressed by evaluating the performance of OFT first by applying the evaluation criteria of productivity, effectiveness, and impact to each of the selected cases and then reflecting

³⁸² Tiron, "Experimental Shipbuilder Seeks Increased Congressional Funding."

³⁸³ "M Ship Aim: Safer Vessels for Special Ops."

³⁸⁴ Charles Robinson, "Personal letter from Charles Robinson to Robert Gates," Office of the Secretary of Defense tracking number 07827-08, May 28, 2008.

³⁸⁵ Brad Graves, "Stiletto Ship," *San Diego Business Journal*, July 5, 2010.

on the office's performance in aggregate. Each of the criteria is applied to Project Stiletto initiated by OFT to evaluate its performance.

1. Evaluating the Productivity of Stiletto

The first criterion, productivity, is a comparison of the program input versus its output. The purpose is to assess the return on investment of Stiletto to determine whether it was worth pursuing. To weigh inputs versus outputs and judge whether a program was productive requires identifying the types of both that are relevant to the office. Examples of the types of performance inputs include (1) level of program funding over time, (2) staff/manpower equivalents dedicated to each effort, (3) amount of leadership/management time or energy.

The primary measure of program input, funding, is illustrated in Figure 11. The funding is divided into the first three years where OFT managed the program and the remaining years where RRTO assumed management of Stiletto. The funding began in 2004 at approximately \$2 million and peaked in 2006 at slightly over \$5 million. The high level of investment early (relative to the remaining years) was due to the capital costs associated with design and construction of Stiletto. While managed by OFT from 2004-2006, Stiletto received approximately \$13.4 million in funding. From 2007-2013, under RRTO management, Stiletto received approximately \$18.3 million. This combined for a total of \$31.8 million in total funding over the life of the Stiletto program.

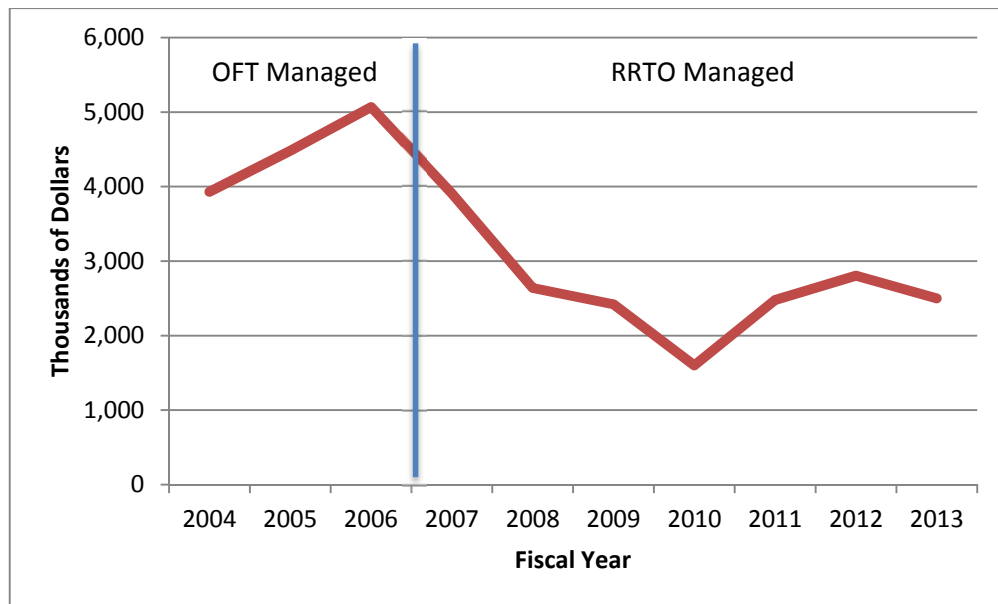


Figure 11: Stiletto Funding, Fiscal Years 2004-2013

Once Stiletto was delivered in 2006, the recurring costs associated with the program went to maintaining the crew and supporting regular deployments. Although some of this funding went to equipment upgrades, Stiletto benefited from receiving regular upgrades per gratis from vendors that used the vessel for testing and left their equipment behind for others to use. This was true of the electronic keel with its plug and play capabilities where companies would insert their system into the system to demonstrate a technology.

Determining the manpower associated with Stiletto was more difficult and not attempted given that personnel were distributed across a variety of organizations. However, the management of the program was performed by one or two staff at OFT and then RRTO afterwards. In terms of leadership time invested, the director of OFT invested

time in the initial decision to develop Stiletto, but much less once the program was underway. Most of the time invested from that point forward was by OFT staff managing the program on a daily basis.

The preceding inputs into the Stiletto program must be weighed against its outputs to render some judgment of the program's productivity. Examples of program outputs used to determine productivity include: (1) new capabilities resulting from a program, (2) the innovation of a resulting capability, (3) resulting force structure or Service program change, (4) changes in business processes or concepts.³⁸⁶

The most tangible output was the new capability that resulted from Stiletto in the form of the vessel itself. Upon delivery of the ship, it was noted by one Navy captain "really, the Navy doesn't have things like this."³⁸⁷ Robinson observed that, "Nothing else is out there than can achieve the qualities important to 'brown water' vessels at a relatively low cost with short design and production cycles."³⁸⁸

Stiletto had a novel hull form and construction that offered unique features compared to the existing Navy inventory. In fact, Stiletto is the only vessel with substantial payload fraction and range in excess of 250nm that is claimed to make fifty knots at full payload.³⁸⁹ Its impact on military operations became apparent through its

³⁸⁶ For the purposes of this study, "capabilities" are the ability to achieve specified military objectives and may come in the form of military technology or changes in tactics or doctrine.

³⁸⁷ Cavas, "A Flexible Stiletto."

³⁸⁸ Doug Sherwin, "Local Maritime Firm Unveils Experimental Ship for Pentagon," *Daily Transcript*, February 1, 2006. See also, "Great Ships of 2008: Stiletto," *Maritime Reporter and Engineering News*, December 2008.

³⁸⁹ Douglas Leonard, "Research in Advanced Surface Effects Ships," Final Technical Report, February 12, 2008.

early trials and deployments leading some to argue that Stiletto “could change the face of counterdrug operations in littoral waters.”³⁹⁰ Between its technical and operational innovations, it became clear that Stiletto provided a new capability that DoD did not already possess. According to those interviewed, it may never have existed if it weren’t for OFT advancing the concept when it did.³⁹¹

In addition to delivering a new capability, Stiletto served as an experimental testbed that allowed the testing and development of both existing and emerging technologies. Although maritime testbeds currently exist, they are often unaffordable (for small businesses) or have backlogs, forcing vendors to wait months or even years before they can use the platforms. However, Stiletto “streamlines the experimental process and helps facilitate the rapid testing and exploration of emerging technologies.”³⁹² It does this by scheduling tests within weeks or months of the original request at little or no cost to vendors. Furthermore, Stiletto’s design and construction endow it with the ability to be modified and experiment with a wider range of equipment unique to different actors in the Interagency as demonstrated during its joint deployments to South America and the Caribbean. In addition to serving as a testbed for technologies, it may be used for

³⁹⁰ Christopher Castelli, “New Deployment Planned for 2009: SOUTHCOM Report Touts Performance of Stiletto Counterdrug Ship,” *Inside Defense Newsstand*, October 23, 2008.

³⁹¹ Based upon author interviews with former OFT staff and observers inside and outside of government. A majority of respondents indicated Stiletto would not have been pursued had OFT not advanced it.

³⁹² “Stiletto Maritime Test Platform Will Be Available for Tours at OceanTech Expo,” *OceanTech Expo*, February 19, 2010.

experimenting with new tactics and has been called “an innovative ship that will serve as a laboratory for efforts to adapt the Navy’s tactics for 21st century conflicts.”³⁹³

A final output to consider when evaluating Stiletto is the demonstrated efficiencies possible when acquiring a system. The department’s acquisition process is widely pilloried for being lengthy and cumbersome, often stifling rather than facilitating innovation. However, Stiletto demonstrated that there were other options to acquiring new capabilities that were both efficient and innovative. As Thomas Hone, OFT’s assistant director for risk management noted at the time, “the importance of Stiletto is not that it meets the needs of SOCOM but that it was conceived and built through a process that was very different from the one usually employed.”³⁹⁴ The process was one that identified an operational need and moved out quickly to develop the capability through iterative testing and then experimentation. Stiletto broke the traditional acquisition mold by speeding through design, research, and development without the typical preliminary analysis and the *100 percent solution*.³⁹⁵

2. Evaluating the Effectiveness of Stiletto

Another measure of program performance is the extent to which it achieves the goals of an organization, otherwise defined as effectiveness.³⁹⁶ This is ultimately a

³⁹³ Pat Toensmeier, “The Pentagon is Betting a Modest Investment in an Innovative Hull Design Could Have Huge Payoffs,” *Aviation Week and Space Technology*, November 21, 2005.

³⁹⁴ Tom Hone, “Transformation Bashing,” *Armed Forces Journal*, March 2006.

³⁹⁵ Hevezi, “Stiletto—Unique Vessel Makes a Sharp Break with Past Practices.” See also Fein, “M Ship Succeeds in Taking Stiletto From Concept to Trials.”

³⁹⁶ See Brewer and Selden, “Why Elephants Gallop,” 689 or Seashore and Yuchtman, “A System Resource Approach to Organizational Effectiveness,” 891-892.

judgment of the investigator based upon data analyzed. The determination of whether goals are met can be based upon either prescribed or derived goals.³⁹⁷ Prescribed goals are those organizational or program goals that are clearly advertised and stated in documents or public pronouncements. Derived (or functional) goals are developed by the researcher from a variety of sources based upon logical consistency.

Of the prescribed goals, Stiletto supported several of them. At the department level, it directly supported one of the 2001 *QDR*'s transformational goals: Leveraging information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture.³⁹⁸ This is because Stiletto's centerpiece—the electronic keel—sought to bring together information from sensors, platforms, etc. and demonstrate how information could be leveraged to deliver greater combat capability at sea. Operational evaluations of Stiletto showed that it achieved this and the information integration capabilities only matured over the years as more vendors plugged into it, leaving their technology behind for others to experiment with.

Stiletto also helped to achieve two of OFT's stated goals: implement network-centric warfare (goal three) and transform capabilities (goal five). It supported the implementation of NCW for reasons stated above and transformed capabilities by producing new capabilities as described in the preceding section. In both cases, Stiletto achieved the goals in a narrow sense. To achieve them more fully, the department would

³⁹⁷ Seashore and Yuchtman, "A System Resource Approach to Organizational Effectiveness," 893.

³⁹⁸ *Quadrennial Defense Review Report* (2001), 7.

have to incorporate Stiletto (or a follow-on capability) more fully into the force and in larger numbers.

Determining definitively whether Stiletto achieved all of the goals of the organization may take several years, but indications to date are that it generally achieved what its developers set out to do. One SOUTHCOM stakeholder argued that Stiletto achieved revolutionary results. According to Navy commander Kevin Quaderer, “We were looking for solutions that are revolutionary instead of evolutionary, things that take off the glide path and bring us big increases in capability. Stiletto is one of those innovations.”³⁹⁹ After its early trials, OFT program staff Navy captain Neil Parrot reported that Stiletto “outperformed our best expectations.”⁴⁰⁰ These observations about Stiletto’s performance were further substantiated by an independent operational evaluation of its deployment to Columbia that found Stiletto a “major success.”⁴⁰¹

3. Evaluating the Impact of Stiletto

The final measure of performance assessed by this study is the impact of a program/organization or its endurance.⁴⁰² That is, the longer-term result of the initiative and the lasting effect it had. This reveals whether a program is deemed valuable outside

³⁹⁹ Cavas, “The ‘Bat Boat’ Experimental Vessel Scares Off Drug Smugglers.”

⁴⁰⁰ Julie Gallant, “Ship Leaves Little Wake, but Makes Lasting Impression,” *San Diego Business Journal*, June 2006.

⁴⁰¹ “Observing the M-80 Stiletto OPEVAL,” *Information Dissemination: The Intersection of Maritime Strategic and Strategic Communications*, Wednesday, October 28, 2008. Available at <http://www.informationdissemination.net/2008/10/observing-m-80-stiletto-opeval.html>, last accessed August 2011.

⁴⁰² Lyden, “Using Parsons’ Functional Analysis in the Study of Public Organizations,” 64.

of the original sponsoring organization—OFT. A program’s endurance is also measured by the form of the initiative (sponsorship, size of program, etc.).

One indication of Stiletto’s endurance is that it continued beyond the dissolution of OFT in 2006. Had the program struggled to demonstrate utility, it likely would have been cancelled at the time of OFT’s closure. Stiletto is a relatively small program with limited constituency so termination would have received little political opposition. However, the program continued under RRTO and maintained roughly the same amount of funding (approximately \$2.5 million/year). It did so while the office was receiving some scrutiny from Congress over the same period. Instead of waning, Stiletto was actually combined with other naval irregular warfare efforts and experienced an increase in overall funding in the fiscal year 2013 budget.

Another impact of Stiletto is that it led to discussions of changes to Navy force structure and the role of smaller vessels in the fleet. For example, Milan Vego, professor at the Naval War College called for a smaller, more versatile force that featured Stiletto as a key component.⁴⁰³ He argued for the creation of Navy “influence squadrons” comprised of a destroyer, a littoral combat ship, two transport ships, patrol craft, and Stiletto. The purpose was to provide greater flexibility in the force to contend with the majority of the world’s naval threats that are better addressed through smaller forces, rather than the larger carrier strike groups around which the U.S. Navy is currently organized. Even if not formally folded into the force as Vego suggests, Stiletto has

⁴⁰³ Bennett, “The (Smaller, Faster, Cheaper) Future of Warfare.” See also Henry Hendrix, “Buy Fords, Not Ferraris,” *Proceedings Magazine* 135, no. 4, April 2009.

already been shown to influence future force development by permitting experimentation with new technologies and naval tactics. Center for Security and Budgetary Assessment senior analyst turned Under Secretary of the Navy Bob Work once referred to Stiletto as an “inexpensive tool” that could teach the Navy new techniques.⁴⁰⁴

A final lasting impact of the program is that it resulted in a capability that may never have been realized. That capability being the union of M-hull design and all-composite ship construction. A vast majority of those interviewed believed that Stiletto or a similar capability would not have been developed, if it weren’t for OFT’s initiative.⁴⁰⁵

E. Summary

In 2004, the Office of Force Transformation initiated development of the world’s first carbon fiber double M-hull high-speed vessel. By pairing operational concepts with advanced technology, OFT wanted to experiment with operational and technical innovations and find new ways of conducting military missions. The result was the all-composite Stiletto vessel that was employed in a series of operational deployments and became a testbed for dozens of emerging technologies.

By 2006, with the dissolution of OFT, Stiletto was transitioned to RRTO, which managed the program through 2013 (the time of this writing). The program was sustained at funding of approximately \$2.5 million/year during that time and conducted dozens of operational tests and deployments. Based upon the criteria applied in this study—

⁴⁰⁴ Louis Hansen, “New Fast Ship May Help Transform Navy,” *Virginian-Pilot*, March 13, 2007.

⁴⁰⁵ According to author interviews with former OFT staff and observers conducted from January 2012 – February 2013.

productivity, effectiveness, and impact/endurance—Stiletto performed well. It was a reasonably productive program generating a number of significant outputs for the modest amount of resource inputs (approximately \$31.8 million from 2004-2013). Some of these outputs included a new capability that was more effective at counterdrug operations and minimizing bodily harm to operators than existing platforms, an experimental testbed for dozens of new technologies, and a demonstration of alternative models of capability development and acquisition. Stiletto was seen by many as a transformational initiative and an “enabler of innovation.”⁴⁰⁶

Its effectiveness may take years to evaluate precisely, but in terms of its alignment with office and departmental goals, Stiletto may be judged as effective—it directly supports at least one major DoD goal and several of OFT’s original goals. The final measure of performance—impact/endurance—also shows the success of OFT’s Project Stiletto in that the effort successfully transitioned to another office when OFT was closed and generated discussions throughout the Navy of force structure changes that would leverage smaller vessels such as Stiletto. Furthermore, Stiletto advanced fields of research and development that may not have expanded without the attention that Stiletto brought them. Specifically, some contend that OFT provided the “crucial breakthrough” for M-hull technology in the community by sponsoring development of Stiletto.⁴⁰⁷

⁴⁰⁶ Castelli, “New Deployment Planned for 2009.”

⁴⁰⁷ Bruce Bigelow, “Burns Key in Designs by Two S.D. Maritime Engineering Companies,” *Union Tribune*, February 27, 2007.

There were several reasons why OFT succeeded in advancing Stiletto and its successful transition to RRTO. The first, as also demonstrated in its success advancing ORS, were the organizational arrangements pursued in development of Stiletto. OFT worked to bring the appropriate stakeholders together to develop it with the least amount of bureaucratic resistance. These stakeholders included the M Ship Co, components of the Navy chartered with small craft development, and selected Combatant Commanders. There was an explicit requirement for OFT to partner with others throughout Stiletto development and this greatly aided in the success of the program.⁴⁰⁸ As part of the organizational arrangement, OFT circumvented the normal acquisition process thus allowing it to deliver a capability within just fifteen months of contracting for it.

A second key to the success of Stiletto was the capability it demonstrated to the community. Once completed, it was an asset that could be showcased at port calls, industry shows, and special events making evident to observers that it was a new capability. Furthermore, the early operational deployments and attendant evaluations demonstrated its utility (over existing technologies) to the user community. Lastly, in its role as an experimental testbed, vendors that used Stiletto to test their technologies immediately saw its utility as a flexible platform, capable of rapidly deploying thus speeding up the time it takes to deliver their products to market. The concept of demonstrating capability to the user community with the expectation that they find utility

⁴⁰⁸ According to an author interview with former OFT staff on February 15, 2012.

and perhaps even adopt or expand the technology was one of Admiral Cebrowski's guiding principles.⁴⁰⁹

A third reason for Stiletto's success is that it was developed in a non-threatening manner, taking aim at no particular program. Whereas ORS clearly challenged big space, Stiletto had no such programmatic inertia against which it was contending. The Mark V RHIB was the only platform that some thought Stiletto could replace but the competition was not direct enough, nor Mark V's constituency large or supportive enough, for this to pose an obstacle. The one community challenged by Stiletto was not an existing program but the naval architecture community that believed carbon fiber was not suitable for vessels as large as Stiletto. This well-entrenched belief was based upon outdated science, but was quickly disproven through Stiletto's demonstrated successes in operational trials.

The preceding analyzes OFT's experiences with one of its leading initiatives to identify areas of strength, weakness, and overall performance. The following chapter applies the same approach to examining another leading OFT initiative.

⁴⁰⁹ According to an author interview on March 28, 2012 with a former OFT program manager who was responsible for developing Stiletto concept with Cebrowski.

CHAPTER SEVEN: CASE THREE—EDUCATION FOR TRANSFORMATION

But in our urgency to adopt technological transformation, I fear that we are neglecting the human side of the equation. We are devoting enormous amounts of money and talent to advance our weapons technologies, but I do not see a similar commitment to advance our service men and women's understanding of the art of warfare.⁴¹⁰

Ike Skelton, 2005
*Remarks at the Dwight D. Eisenhower
National Security Conference*

As part of its efforts to transform the military, the Department of Defense acknowledged the need to consider organizational culture. In fact, in the department's *Transformation Planning Guidance*, Secretary Rumsfeld stated that, "We must transform not only our armed forces, but the department that serves them by encouraging a culture of creativity and prudent risk-taking... There will be no moment at which the department is transformed. Rather, we are building a culture of continual transformation."⁴¹¹

The role of organizational culture in changing the military is well documented and supported by both theory and recent operational experience. Ann Swidler has argued that culture is important because it has long been identified as primary factor in explaining

⁴¹⁰ Ike Skelton, "Beyond Iraq" (speech delivered at the Dwight D. Eisenhower National Security Conference, Washington D.C., September 28, 2005).

⁴¹¹ *Transformation Planning Guidance*, 1.

innovation.⁴¹² Elizabeth Kier applies Swidler's theory of *culture in action* to demonstrate that culture (not structures and functions) best explains military change.⁴¹³ Kier concludes that a military's culture shapes its choice between offensive and defensive doctrines. Theo Farrell of King's College has even argued that culture can be a major causal factor in military innovation.⁴¹⁴ These findings have played out in recent operations as the initial phase of Operation Iraqi Freedom suggested, "that changing culture and behavior, although neither quick nor foolproof, can yield dramatic returns."⁴¹⁵

One key lever in changing an organization's culture is through its professional training and education system. This is because the education system conveys knowledge to rising leaders and inculcates them with the organization's strategic vision. This is a point long-held by organizational theorists and practitioners alike as Price Pritchett and Ron Pound argue that, "If you are going to break the grip of old culture, seize control of the schools."⁴¹⁶ The same argument rings true in the defense community as a collection of change agents and experts convened in 2003 called the professional military education (PME) system a "fulcrum of organizational change to a new paradigm."⁴¹⁷ There are

⁴¹² Swidler, "Culture in Action," 279.

⁴¹³ Kier, *Imagining War*.

⁴¹⁴ Farrell and Terriff, *The Sources of Military Change*, 7-8.

⁴¹⁵ Terry Pudas and Ralph Doughty "Transforming Interagency Education: People and Process Requirements for Success," in *Crosscutting Issues in International Transformation*, eds. Ralph Doughty, and Linton Wells II (Washington, D.C.: National Defense University Press, 2009), 78.

⁴¹⁶ Price Pritchett and Ron Pound, *High Velocity Culture Change: A Handbook for Managers* (Plano, TX: Pritchett Publishing Company, 2003), 42.

⁴¹⁷ Edgar M. Johnson, *Workshop Introducing Innovation and Risk: Implications of Transforming the Culture of DoD* (Alexandria, VA: Institute for Defense Analyses, 2004), II-9. The group also included leader development and promotion as important elements of changing an organization.

historical examples of changes in the institutions driving change in the larger organization, one such example being the successful introduction of maneuver warfare in the Marine Corps in the late 1990's and early 2000's.⁴¹⁸ Past experience using schools to promote change to have lasting impact on leaders influenced OFT's thinking as evidenced by remarks by its acting director, Terry Pudas, who stated that, "You can create and cancel weapons programs but education is something you can't take away."⁴¹⁹

The following chapter analyzes OFT's experience with one of its leading initiatives to identify areas of strength, weakness, and overall performance. It does so by examining the internal and external variables introduced in preceding chapters and the various actors involved with the office's Education for Transformation (EFT) initiative. The study's research question is then addressed by evaluating the performance of OFT by applying the criteria of productivity, effectiveness, and impact (as presented in Chapter Two) to EFT. Preceding chapters apply the same approach to examining other leading OFT initiatives.

A. Motivating Factors: The Emergence of the Education for Transformation Initiative

There was a growing sense among observers, and especially OFT leadership and staff, that the curriculum at the PME institutions around the United States had become stagnant and wasn't adequately addressing the complexities of a rapidly changing

⁴¹⁸ Terry Pierce, *Warfighting and Disruptive Technologies: Disguising Innovation* (New York: Frank Cass, 2004), 99-100.

⁴¹⁹ Gopal Ratnam, "Pentagon Establishes Academic Chairs to Push Transformation," *Defense News*, February 27, 2006, 18.

world.⁴²⁰ Their instruction typically involved the diffusion of existing knowledge and, except for select institutions, did not contribute to the creation of new knowledge through faculty research or learning lessons from current operations. One vocal critic, Marine Corps Lieutenant General Paul van Riper has argued that the PME system “was built for the Cold War and needs a complete overhaul.”⁴²¹ These views were shared by OFT’s director, Admiral Cebrowski, who was well-positioned to render judgments on the state of PME given his recent assignment as president of the Naval War College. In an unpublished monograph, Cebrowski stated that:⁴²²

Indeed, my impression is that university faculties throughout the United States, and particularly within the upper tiers of the Defense Department’s system, are not only inclined toward intellectual conservatism, but also generally reject the hypothesis that the U.S. military ought to be transforming constantly and at a faster rate. I hope it is a false impression on my part, but my stint as president of the Naval War College did little to disabuse me of it.

Based upon Cebrowski’s experience with and perspectives of military education, OFT embarked upon an effort to assess the department’s professional military education and develop a strategy for transforming the culture of the broader department starting with the schools. It began with a series of workshops aimed at identifying the strengths and weaknesses of PME and also examining relevant cases from leading private sector corporations.

⁴²⁰ John Garstka, “Education for Transformation Information Briefing,” Office of Force Transformation background briefing, April 8, 2005.

⁴²¹ Pierce, *Warfighting and Disruptive Technologies: Disguising Innovation*, 9.

⁴²² Arthur Cebrowski, *Military Transformation*, unpublished monograph, review draft, January 3, 2005, 226-227.

The office convened three workshops that brought together experts from throughout the community to share their experiences and views on the current state of PME. The first workshop was held at Wye River, August 26, 2002. It explored the benefits of a competency based learning framework for senior leaders. The next workshop was hosted at the U.S. Army War College, October 7-8, 2003. This workshop looked at how the concept of network-centric warfare was being covered in the existing curriculum of DoD's learning institutions. The final workshop was held later the same month at the Institute for Defense Analyses in Alexandria, Virginia, October 21-22, 2003. This workshop focused on key relationships between innovation and culture.⁴²³

In addition to the workshops, OFT mined recent cases from the corporate world to gain perspective on organizational learning. It conducted case studies of IBM, Motorola, and Home Depot and their experiences with corporate learning. The cases revealed that, of the three, IBM and Motorola saw the need to create a culture of learning. Common themes that resulted in change across them and contributed to their growth were strong leadership, effective communication, leading technology, and an active rewards/incentives program.⁴²⁴

Based upon these workshops and case studies, several lessons emerged which guided the office in its development of a strategy for transforming professional military

⁴²³ For more details on the workshop, see Johnson, *Workshop Introducing Innovation and Risk: Implications of Transforming the Culture of DoD*.

⁴²⁴ The cases are further outlined in Garstka, "Education for Transformation Information Briefing."

education.⁴²⁵ The first lesson was that the curriculum at the institutions needed to be better balanced to teach both core curriculum and emerging concepts that may not yet be a part of policy or doctrine. This is because globalization and technological innovations were outpacing many learning institutions and the schools needed to better address these rapid changes. A second lesson that emerged was that schools need to focus more on research and generating new knowledge and facilitating collaboration across schools. The final lesson was that PME needed to develop high-quality continuing education to afford opportunities to Service members throughout their career and this education should incorporate emerging concepts. Taken together, these lessons and others shaped what became known as OFT's *Education for Transformation* initiative.

B. Transforming DoD Through Education for Transformation

Learning lessons from both history and the corporate world, OFT recognized that transforming the department required changing the culture that pervades it. It also required diffusion of new knowledge about transformation throughout the community. The office planned to accomplish this by launching the Education for Transformation initiative aimed at the department's Service schools responsible for educating the next generation of mid-level and senior military leaders. The following outlines the development of the initiative, the key actors involved, resources committed to it, and the major challenges it encountered.

⁴²⁵ These lessons are further detailed in Chuck Patillo, "Education for Transformation" (presentation, Leadership Competencies Symposium, March 24, 2004).

1. Development of the Program

In 2004, OFT launched its Education for Transformation initiative with the goal of creating “a self-governing, dynamic, engaging, collaborative educational community of interest that creates, diffuses, and applies new knowledge for defense transformation.”⁴²⁶ It sought to transform the culture of the department by influencing the education of its military ranks. The initiative had three primary objectives: (1) discover, create, or cause to be created, new knowledge needed for defense transformation, (2) diffuse or cause to be diffused, new knowledge needed for defense transformation, and (3) apply or cause to be applied, new knowledge for defense transformation.

The first objective of EFT was to discover, create, or cause to be created, new knowledge needed for defense transformation. This was to be accomplished through original research that would contribute to thinking about changing large organizations. OFT was going to do this by becoming an institutional focal point for a new research program and by fostering coordination and collaboration across the military education community.

A second objective was to diffuse or cause to be diffused, new knowledge needed for defense transformation. Advocating for transformation by developing course electives capable of becoming core curriculum was one of the office’s approaches to accomplishing the objective. Another was through collaboration in the development and

⁴²⁶ Terry Pudas, “Briefing to the Acting Deputy Secretary of Defense Gordon England,” May 26, 2005.

delivery of short courses and accredited courses that could complement traditional Service schools.

Applying or causing to be applied, new knowledge for defense transformation was the third objective of EFT. The application of new knowledge was to be accomplished through the development of a series of case studies that could be used in the classroom and demonstrate to others the relevant lessons learned from current operations for transformation.

OFT planned to accomplish these objectives through its EFT initiative, which originally consisted of four elements: (1) the Transformation Chairs Program, (2) the Transformation Research Program, (3) transformation short courses, and (4) the Transformational Leadership Certificate Program. Each of these elements is described below.

Transformation Chairs Program

The first element of EFT, the Transformation Chairs Program, was the largest and most enduring element of the overall initiative. Its primary purpose was to diffuse emerging knowledge about transformation at various PME schools. It would seek to accomplish this by establishing *transformation chairs* at each of the schools. The chairs would facilitate curriculum modifications supportive of transformational change. The underlying precept of the program was “the need to move transformational thinking down

into the heart of the military organizations, principally through the education system, to kick-start a bottom-up push for change.”⁴²⁷

Created by OFT in 2004, the chairs program involved funding for chairs for up to three years at all participating schools. This cost OFT approximately \$150-200 thousand per year covering faculty salaries, selected benefits, and travel. At the end of three years, the institution was to evaluate the utility of the chair and ideally assume responsibility for fully-funding the position. The first transformation was established at Defense Acquisition University (DAU) in August 2004 through a memorandum of understanding between DAU and OFT. Originally, only a handful of schools agreed to host a chair but this number eventually grew to thirteen locations covering most of the intermediate and senior military educational institutions.

The instructional curriculum was left to the participating schools to establish and OFT did not dictate what was to be taught or how. Each of the chairs was provided with case studies and suggested curricula but instructors were free to design their own courses. The schools focused on different aspects of transformation based upon the research interests of the faculty and the orientation of the school. For example, under its first chair, Dr. Georgia Sorenson, the Army War College emphasized the transformative role of leadership whereas during the same time Air War College chair, professor Ted Hails, focused on network-centric warfare.

⁴²⁷ Derrick Neal, Henrik Frimin, Ralph Doughty, and Linton Wells II, eds., *Crosscutting Issues in International Transformation* (Washington, D.C.: National Defense University Press, 2009).

A key part of the chairs network and a requirement of participating were the quarterly meetings that brought together all of the chairs to collaborate on research and share experiences. The location for this recurring meeting rotated between the member schools. The early chairs meetings focused on administrative matters such as how to get the program running and establishing curriculum, but the agenda changed over time. The quarterly meetings were seen as an essential part of the program as OFT's acting director, Terry Pudas stated "...the real exciting part is that [these people] come together quarterly to collaborate and share, which is really very powerful because they're learning from one another."⁴²⁸

By June 2006, nearly all of the chairs were filled with transformation chairs at the following: Air University, the Army Command and General Staff College, the Army War College, Defense Acquisition University, Marine Corps University, National Defense University (Center for Technology and National Security Policy), National Defense University (Joint Forces Staff College), Naval Postgraduate School, the U.S. Military Academy, and the U.S. Naval Academy. At that time, there were also memorandums of agreement in coordination with three eventual members of the network: the U.S. Air Force Academy, the Naval War College, and the Air Force Institute of Technology. There were also preliminary discussions with the Joint Military Intelligence College, which never materialized into full membership.

⁴²⁸ Gurney and Smotherman, "An Interview with Acting Director, DoD Office of Force Transformation Terry J. Pudas," 35.

Table 5 presents the transformation chairs at each of the thirteen member institutions. Where more than one chair is listed, it means that multiple people filled the role over the years. Those Transformation Research Programs, which each school was involved with, are listed along with whether or not they hosted a Transformation Short Course at some point.⁴²⁹ When available, each program's research focus area is also provided. Blanks in the table do not indicate that the institute did not have a research program or focus area, simply that the data on them were not readily available.

⁴²⁹ Sources of data for the table: Pudas 2005, "Transformation Chairs Status," Office of Force Transformation Briefing, 27 September 2006.

Table 5: Summaries of Transformation Chairs and Research

	Transformation Chair	Transformation Research Program	Transformation Short Course	Research Focus Area
Army War College	Dr. Georgia Sorenson/Dr. Rich Meinhart	V Corps/3rdID Case Study	-	Hastily formed networks, leadership development
Air University	Prof. Ted Hails	Space Support to Joint Force Commander	-	Multiple projects, Blue Horizons (Air Force Futures Study)
Army Command and General Staff College	Dr. Ralph Doughty	-	-	Leader development for a network enabled force
Marine Corps University	LtGen Paul Van Riper	Fallujah Case Study	-	Operation Iraqi Freedom II/Irregular Warfare Campaign Study
Center for Technology and National Security Policy	Dr. Stu Johnson / Dr. Lin Wells	SARS Case Study	Hosted NCO Short Course	Transformation for stabilization
Joint Forces Staff College	Prof. John Stull	-	Hosted NCO Short Course	Multiple Joint Advanced Warfighting School student topics
U.S. Military Academy (Army)	Dr. Timothy Elkins	Methodologies for Measuring Information Advantage	-	-
U.S. Naval Academy	Dr. John Limbert	NCO concepts to seamanship and navigation	-	-
U.S. Air Force Academy	Dr. Rich Hughes	-	-	-
Defense Acquisition University	Prof. Tom Laccone/Prof. Jerry Emke	-	Hosted NCO Short Course	Sense and respond logistics
Naval Post Graduate School	Dr. John Arquilla/ Prof. Sue Higgins	Methodologies for implementing NCW; Methodologies for Capabilities Based Planning	Hosted NCO Short Course	-
Naval War College	Dr. Tom Hone	-	-	-
Air Force Institute of Technology	Dr. Nat Davis	-	-	Cyberspace/Cyber warfare, NCW

Transformation Research Program

A second element of the EFT initiative was the Transformation Research Program. This was aimed at creating new knowledge or material that the chairs could use during their instruction. It involved collaboration between the U.S. and international institutions in pursuit of research topics assigned and funded by OFT. Through the program, the office sponsored cutting edge, collaborative research spanning military, civilian, and international institutions.

The original intent of the program was to have research performed by schools that were members of the chairs network, but this didn't occur and the only research conducted under this program were a few topics chosen and funded by OFT. The Transformation Research Program did not materialize as the office had intended and quickly withered away.

Transformation Short Courses

Development of a series of transformation *short courses* comprised the third element of the EFT initiative. The purpose was to develop and offer a range of short courses (in length) on topics of significant importance to defense transformation with the goal of diffusing new knowledge in near-real time. Some of the early course topics included network-centric warfare, innovation and experimentation, information age organizational and culture change, and capabilities-based planning.

The first transformation short course was on network-centric warfare, and was offered in April 2004 to Allied Command Transformation's North Atlantic Treaty Organization (NATO) Network Enabled Capability integrated product team. The next

course, on innovation and experimentation, followed shortly thereafter in June 2004.

After these initial offering, the demand for short courses increased. As of May 2005, the course had been offered nine times in three countries to approximately a dozen nations and over 200 students.⁴³⁰

Transformation Leadership Certificate Program

The final element of the EFT initiative was the Transformational Leadership Certificate Program. This was initially a collaborative effort between OFT and National Defense University's (NDU) School for National Security Executive Education. It was envisioned as a combination short course and accredited course format. The purpose was to prepare future leaders with knowledge and skills to size, shape, resource, and change the force. However, although it was promoted as one of the four elements of EFT, it was never formalized and was quickly abandoned by OFT.

Transformation Case Studies

Although not introduced as one of EFT's four foundational elements described above, part of the initiative that was an important enabler was a series of case studies that OFT developed to illustrate relevant aspects of transformation apparent in current operations. These case studies were made available to the transformation chairs and short courses as instructional material to use in the classroom, and many chairs did make use of them. The case studies were also provided to researchers in the transformation research program and to others in EFT who served as guest lecturers on a variety of topics. The case studies were originally envisioned as products that the chairs network could generate

⁴³⁰ Pudas, "Briefing to the Acting Deputy Secretary of Defense Gordon England."

but it ultimately fell on OFT to fund for development by other organizations (some of which were members of the chairs network).

The initial case studies focused on providing examples of how network-centric operations (NCO) transformed current operations. They were provided to the entire chair's network and stored in a shared online repository available to all of the chairs.

Some examples of the case studies include:

- Command and control for networked forces (focusing on Task Force 50 in Operation Iraqi Freedom), produced by the University of Arizona's Center for Management of Information;
- Ground maneuver (focusing on V corps and 3rd Infantry Division in Operation Iraqi Freedom), produced by the US Army War College;
- The value of information technology (resulting in multiple cases), produced by the University of California at Irvine's Center for Research on Information Technology in Organizations.

2. Key Actors

Education for Transformation involved the interaction of a variety of key actors at three levels: individuals, organizations, and institutions. Table 6 provides an overview of the actors and their roles. Greater detail is provided on selected major actors below.

Table 6: Education for Transformation Key Actors

Actor	Role
Individuals	
Director, OFT (Cebrowski)	Served as program's primary proponent and was critical to establishing MOUs with institutions hosting Transformation Chairs.
Organizations	
Office of Force Transformation	Developed and managed the Stiletto program and worked to overcome bureaucratic resistance.
U.S. Professional Military Education Schools	Many served as hosts to Transformation Chairs and supported research as part of the EFT initiative.
International Military Colleges	Added depth to discussions at early Chair's meetings and extended the life of the network after OFT funding expired.
USD (Personnel and Readiness)	Nominally responsible for overseeing military education but routinely defers to the Joint Staff (J7).
Joint Staff (J7)	The Chairman's directorate responsible for overseeing military education and developing and implementing the Officer Professional Military Education Policy.
Institutions	
None	-

Individuals

As with other major OFT initiatives, the office's director, Admiral Cebrowski, played a major role in the development of EFT. He brought to the position his experience as president of the Naval War College where he had gained perspectives on the state of PME. He recognized the need to infuse the institutions with new perspectives as he was once reported as saying "to change the schools, you have to change the faculty."⁴³¹ In

⁴³¹ According to an author interview with a former OFT program manager on January 31, 2013.

advancing EFT, Cebrowski served as its chief spokesperson and proponent. He was critical to getting memorandum of understanding (MOU) signed with the Service schools that hosted transformation chairs. Without him playing this role, the program would never have succeeded.⁴³²

Organizations

The Office of Force Transformation and its staff were essential to not just the sponsorship of EFT but the management and direction of it. It required careful coordination with the member institutions to put MOUs in place and then to build a basis for the curriculum to be taught. Among the staff, one of OFT's assistant directors, Mr. John Garstka, was most important in managing and advancing EFT. He also oversaw its transition to OSD(Policy)/F&TR. The office navigated bureaucratic issues inside of the Pentagon and was able to gain the support of OSD(P&R) and Joint Staff(J7), both of whom had bureaucratic equities in professional military education.

Other organizations important to EFT were the PME schools that hosted transformation chairs and various EFT events. Thirteen schools around the United States hosted chairs and had a stake in the program. Some of the administrations at these schools were initially skeptical of transformation chairs and even after agreeing to host them, were resistant to changing their curriculum to focus on transformation.

Various international members of the transformation chairs were also important actors in the development of EFT through their participation in the transformation chairs

⁴³² According to author interviews with former EFT program participants and Transformation Chairs on January 31, 2013, February 7, 2013, and February 19, 2013.

network. Some of these included representatives from Sweden, Australia, the United Kingdom, and occasional participation from Italy and Singapore. The participants were from defense colleges and institutes analogous to the schools represented by the U.S. members. The role of the international chairs was particularly important given that it was the transition from the original transformation chairs to the international transformation chairs network that permitted the program to continue after OFT's original three year funding expired.

The Office of the Under Secretary of Defense for Personnel and Readiness OUSD(P&R) in the Pentagon has responsibility for *total force readiness* including training and education. Although they had no role in the EFT initiative, the office is responsible for some level of oversight of the senior service schools and service academies, which were targets of the program and where the transformation chairs resided. Instead, OUSD(P&R) has deferred to Joint Staff(J7) for much of the oversight of Joint PME. This passive role in overseeing military education has not gone unnoticed with observers such as the Government Accountability Office calling on OUSD(P&R) to step-up its oversight of the institutions.⁴³³

A final organization with some stake in EFT was the Chairman of the Joint Chiefs of Staff Directorate for Joint Force Development otherwise known as Joint Staff (J7). This element of the Chairman's staff is responsible for most major activities involving the development of the future joint force. In addition to training, exercises, doctrine,

⁴³³ U.S. Government Accountability Office, "Military Education: DOD Needs to Enhance Performance Goals and Measures to Improve Oversight of Military Academies," GAO Report GAO-03-1000, September 2003.

concept development, etc., joint force development involves military education. In this role, the directorate is responsible for developing and implementing the Officer Professional Military Education Policy—an instruction that “distributes the policies, procedures, objectives, and responsibilities for officer professional military education and joint officer professional military education.”⁴³⁴ Given its oversight role and the issuance of the guidance, it could be expected that Joint Staff (J7) would closely follow the EFT initiative and conceivably even shape it in some way but it did neither according to those involved in the program.⁴³⁵

Institutions

Unlike the other OFT initiatives analyzed in previous chapters, EFT didn’t involve the participation of any institutions outside of the department. For example, neither the defense industry nor Congress played a role in the development of the program. The main reason for this is that the effort didn’t challenge any major equities or programs that would normally draw the interest of outside parties.

3. Resourcing Education for Transformation

Funding for EFT increased incrementally under OFT’s leadership. From 2002 to

⁴³⁴ Chairman of the Joint Chiefs of Staff, “Officer Professional Military Education Policy,” CJCSI 1800.01D, September 2012. Available at http://www.dtic.mil/cjcs_directives/cdata/unlimit/1800_01.pdf, last accessed October 2012.

⁴³⁵ According to author interviews with former EFT staff and transformation chairs on January 31, 2013 and February 7, 2013.

2006, funding rose from \$165,000 in 2002 to over \$3.3 million in 2006 (see figure 12).⁴³⁶

The “transformation chairs funding” was funding dedicated to the funding of chairs at member institutions and general support of the program. All other EFT funding (for case studies, transformation research program, etc.) is captured under “other education programs funding.” Funding for the EFT came entirely from OFT and there were no other sources of funding.

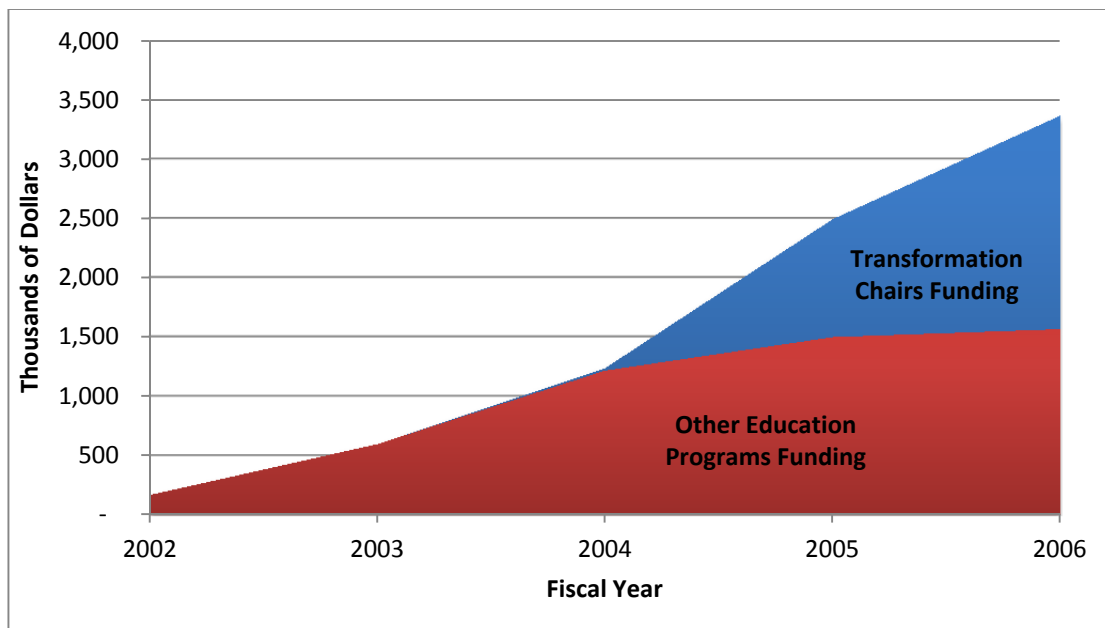


Figure 12: Funding for Education for Transformation, Fiscal Years 2002-2006

From 2002-2006, OFT spent a total of approximately \$7.8 million on the EFT initiative. Almost \$3 million of this was allocated to the transformation chairs program.

⁴³⁶ Figure data from Office of Force Transformation, *2005/2006 Strategic Plan and 2006/2007 Strategic Plan*.

This was under half of the overall EFT initiative. The remainder of the funding was spent on transformation case studies, the transformation research program, and other supporting activities. This funding was required to build curriculum and an intellectual basis for instruction while efforts were taken to put agreements in place with the participating institutions.

4. Challenges Encountered

Even though OFT was able to get EFT established with some momentum behind it, the program was not without its challenges. One challenge was establishing curriculum within selected participating schools. The reason for this was that the course of instruction the chairs were pursuing was seen at odds with what some of the schools were focused on. That is, many of the schools had as their mandate training field grade officers for command. Therefore, their core curriculum was aimed at training majors (or equivalents) on tactics and near-term operational challenges, not strategy or longer-term transformational trends. This natural tension “made it difficult to make it into the curriculum.”⁴³⁷ However, the transformation case studies from current operations made it easier by demonstrating the benefits of transformational concepts through the lens of current operations. This resulted in transformation concepts occasionally making it into elective offerings, although not part of the core curriculum.

Another challenge was funding of the positions by OFT. Initially, the offer of three year funding helped to alleviate anticipated institutional resistance. Most of the

⁴³⁷ According to an author interview with a former Transformation Chair on February 7, 2013.

school administrations saw the chairs as a *free good* and an opportunity to comply with the latest departmental guidance calling on the military to transform. Those in OFT had hoped the chairs would extend beyond the initial three-year charter through funding that the schools would provide, however, that was not the case. Once funding expired, schools either eliminated the position or assigned faculty other roles and permitted them to assume the transformation chair as an ancillary duty. While membership across DoD schools shrank, it did not shrink as much as many had thought it would.⁴³⁸ To offset these losses, around the same time, the network took on international members to include Australia, Singapore, Sweden, and the United Kingdom.

C. Beyond OFT: The Evolution of Education for Transformation After OFT Disestablishment

Even in light of these challenges, elements of the EFT initiative continued beyond the closure of OFT. The initiative transitioned to OSD(P)/FT&R once the decision to fold OFT was made. While the transformation chairs program continued under these new auspices, other elements of EFT withered away along with the funding of the chairs shortly thereafter.

1. Transitioning the Program

With the disestablishment of OFT in October 2006, the future of the EFT program rested with one of the office's successors in OSD(P)/FT&R. The program and its funding transitioned to this office and continued to be overseen by its original program manager.

⁴³⁸ Neal et al., *Crosscutting Issues in International Transformation*, x.

Another transition that occurred around the same time as the closing of OFT was the expansion of the transformation chairs network to an international network of faculty including members from U.S. allied nations. This expansion was neither funded by OFT nor a planned evolution of the group but a welcomed broadening of the office's original vision. The international chairs included representation from the North Atlantic Treaty Organization (NATO), the United Kingdom, Sweden, and Australia with occasional participation of Italy and Singapore.

The mission of the international transformation chairs network is to “provide a forum to challenge thinking, leverage shared knowledge and inform the debate about the national and international security implications of global transformation.”⁴³⁹ Its stated objectives are to:⁴⁴⁰

- Inform the ongoing debate with forward-thinking concepts on major transformational issues;
- Conduct research that identifies crosscutting issues, opens new vistas, and validates (or challenges) current initiatives; and,
- Shape and share curricula to help educate and prepare future leaders and decision-makers.

2. Developments Since OFT Disestablishment

In addition to the emergence of the international network, there were further

⁴³⁹ Ibid., ix.

⁴⁴⁰ Ibid., xi.

developments in the EFT program since the disestablishment of OFT. These were aimed at translating transformational concepts into action in the form of publications and actively advocating for changes in the force. One notable development was the chair's involvement in an OSD(Policy)-led effort to identify emerging trends in the security environment that would impact defense planning.⁴⁴¹ In support of this, the chairs were "actively participating in not only identifying potential shocks but in quantifying (ranking) their impact as well as their likelihood."⁴⁴² Their contribution resulted in two chapters of the eventual publication and was a centerpiece of the research.

Another development was the chair's role in helping to mainstream the issue of cyber operations and the need for the department to pay increased attention to it. One example of this was their hosting of a cyber operations workshop at National Defense University in April 2008.⁴⁴³ The workshop involved participation from throughout the national security community and presentations on a variety of topics, resulting in a working theory of cyber operations. The event was to be a joint venture with NDU's Information Resources Management College (IRMC) but the college resisted and did not see it within its mission. According to one of the workshop's primary organizers, IRMC

⁴⁴¹ For more information on "shocks and trends," see Jennifer Dabbs Sciubba, "Environment, Population in the 2008 National Defense Strategy," *NewSecurityBeat*, October 14, 2008. Available at <http://www.newsecuritybeat.org/2008/10/environment-population-in-the-2008-national-defense-strategy/#.URexVp2M0o>, last accessed August 2011.

⁴⁴² Tim Elkins, "USMA Chair for Transformation," *Systems Connection* XVI, November 2007, 11. See also Naval Postgraduate School, Transformation Chair, "Forces Transformation Chairs Meeting: Visions of Transformation 2025—Shocks and Trends," February 21, 2007, available at <http://www.docstoc.com/docs/39076920/trends-and-shockdoc---Visions>, last accessed August 2011.

⁴⁴³ "Cyber Power and National Security," (conference proceedings National Defense University, April 30-May 1, 2008). Additional information available at <http://www.ndu.edu/CTNSP/index.cfm?type=section&secid=21&pageid=2>, last accessed January 2013.

“did not see it as their job to mainstream cyber operations as an issue. We [the chairs] set the table, made breakfast and they [IRMC] walked away from it.”⁴⁴⁴ This workshop and other efforts by the chairs were instrumental in the Joint Staff increasing its focus on cyber instruction at the PME institutions.⁴⁴⁵

D. Evaluation of OFT’s Education for Transformation Initiative

As described in Chapter Two, the study’s research question will be addressed by evaluating the performance of OFT first by applying the evaluation criteria of productivity, effectiveness, and impact to each of the selected cases and then reflecting on the office’s performance in aggregate. Each of the criteria is applied to the Education for Transformation initiative advanced by OFT to evaluate its performance.

1. Evaluating the Productivity of the EFT Initiative

The first criterion, productivity, is essentially a comparison of the program input versus its output. The purpose is to assess the return on investment of the EFT initiative to determine whether it was worth pursuing. To weigh inputs versus outputs and judge whether a program was productive requires identifying the types of both that are relevant to the office. Examples of the types of performance inputs include (1) level of program funding over time, (2) staff/manpower equivalents dedicated to each effort, (3) amount of leadership/management time or energy.

⁴⁴⁴ According to an author interview with a former OFT assistant director on January 31, 2013.

⁴⁴⁵ Neal et al., *Crosscutting Issues in International Transformation*, xi.

The primary measure of program input, funding, is illustrated in Figure 13.⁴⁴⁶ It is separated into the funding allocated to the transformation chairs program and the remainder, which went to such things as the Transformation Research Program, case studies, etc. The funding for EFT grew steadily from 2002 to its peak in 2006 to almost \$3.5 million. It was in the same year that OFT was folded and the program transitioned to OSD(P)/FT&R. The funding began to decline and withered up entirely by the end of fiscal year 2010. This decline from 2006 had as much to do with the sun setting of transformation chairs funding as it did the closure of the office. Indeed, the funding for the chairs was limited to three years at each participating institution at which point the parent institutions were expected to provide the funding—most did not.

By 2006, the funding for “other education programs” climbed to approximately \$2.5 million. This funding covered things such as the Transformation Research Program, case studies and curriculum development, etc. Since there were no three year limits associated with this funding, it could have conceivably continued with the transition to OSD(P)/FT&R but it didn’t. Instead, the resources were put to other purposes.

From 2002 to 2010, a total of approximately \$12 million was spent on the EFT initiative. Of this, \$7 million was spent on the transformation chairs and the remaining \$5 million on other education programs. Over time, this meant that almost \$7.8 million of the total funding was allocated to OFT’s management of the program (2002-2006) and \$4.3 million spent under the aegis of OSD(P)/FT&R.

⁴⁴⁶ Figure data from Office of Force Transformation, 2005/2006 Strategic Plan, Office of Force Transformation, 2006/2007 Strategic Plan, Air Force Institute 2008 Annual Report.

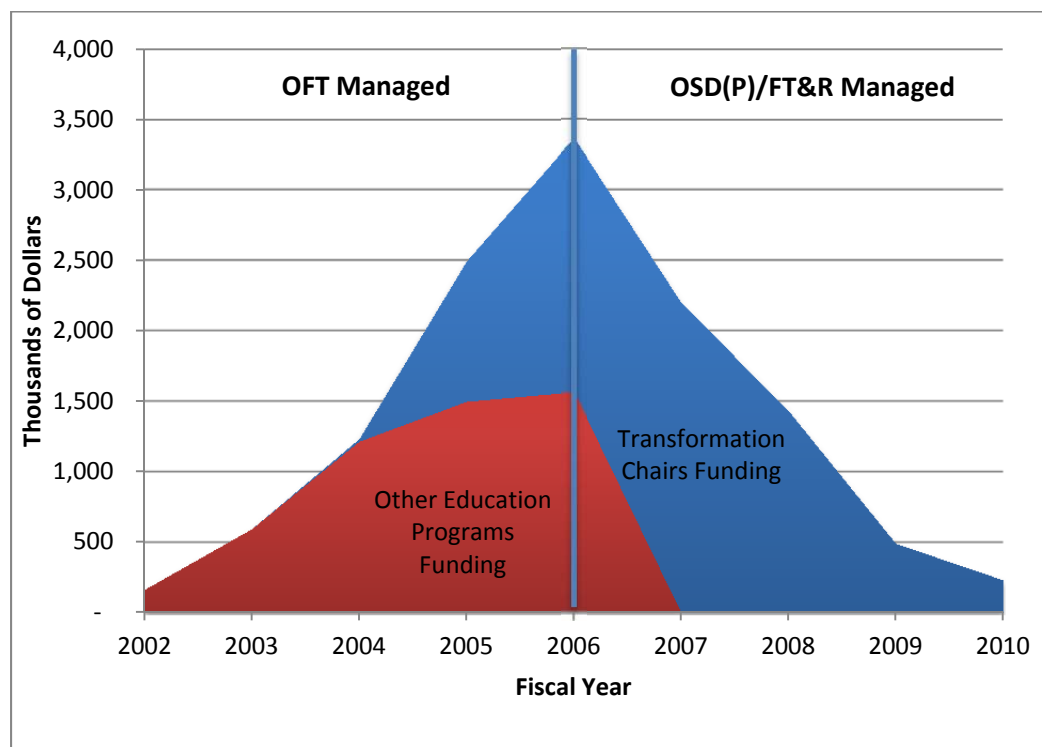


Figure 13: Education for Transformation Funding, Fiscal Years 2002-2010

Another key program input is the staffing/manpower required to sustain the program. For the broader EFT initiative, these figures are difficult to estimate given that much of the Transformation Research Program, case study development, etc. were contracted out and determining the manpower involved would be difficult.⁴⁴⁷ However, for the transformation chairs program, the staffing was more straightforward. OFT had one or two staff that oversaw the program, there were thirteen chairs (at the program's

⁴⁴⁷ It could certainly be estimated using a man-year cost equivalent but the types of organizations OFT contracted with varied greatly as did their average man-year costs.

peak) and an administrative support person under contract. This brings the total to approximately sixteen people involved in the transformation chairs program at its height covering institutions that spanned from the east to the west coast of the United States.

Leadership time too is a key program input because it is a limited resource in an organization and trades off with other programs that a leader may be promoting. However, Admiral Cebrowski saw transforming organizations and culture as an important part of the department's overall strategy and demonstrated this by the amount of time he invested in the EFT initiative. Although it was John Garstka (one of the office's assistant directors) who led the program on a day-to day basis both at OFT and then OSD(P)/FT&R, it was Cebrowski who invested considerable time in working with the presidents of the institutions to get them to agree to host transformation chairs. The presidents were a network of leaders he was already familiar with having come from the Naval War College, but some of them required convincing nonetheless. It is impossible to estimate exactly how much time Cebrowski dedicated to EFT, but it was considerable, when compared to the many other initiatives OFT had underway.

The preceding inputs into the EFT initiative must be weighed against its outputs to render some judgment on the program's productivity. Examples of program outputs used to determine productivity include: (1) new capabilities resulting from a program, (2) the innovation of a resulting capability, (3) resulting force structure or Service program change, (4) changes in business processes or concepts.

There were several new capabilities that resulted from the EFT initiative but, unlike traditional military capabilities such as technology or tactics and doctrine that

directly affect warfighting outcomes, the new capabilities from EFT are indirect given they influence the military education system whose impact are more difficult to measure. One new capability produced by EFT was the increased course offerings on network-centric operations at the PME institutions. This hadn't previously existed and came in the form of the NCO short courses that were considered a "major success" by some and also the NCO case studies that demonstrated "clear value" to the community.⁴⁴⁸ In addition to these new capabilities, the initiative succeeded at getting transformation-related materials into core curriculum at many schools and electives (such as NCO) at others.⁴⁴⁹

Another new capability introduced by EFT was the creation of the transformation chairs across the PME institutions and even overseas. These were new positions that wouldn't have otherwise existed and provided the schools with additional instructors and researchers capable of training the future military leaders. The chairs both produced materials that contributed to the greater national security community and formed a network of collaborators that continued well beyond their original OFT sponsorship. Indeed, the chairs hosted two major international conferences that yielded published volumes on transforming military capabilities and were also major contributors to OSD(Policy) publications on future shocks and trends.⁴⁵⁰

⁴⁴⁸ Pudas, "Briefing to the Acting Deputy Secretary of Defense Gordon England."

⁴⁴⁹ Barbara Honegger, "Defense Innovators Hold Transformation Chairs Meeting," *Naval Post Graduate School in Review*, April 2007, 12.

⁴⁵⁰ As of this writing, the international transformation chairs network was planning its third conference to be held in Washington, D.C. in June 2013.

Another important output is innovation in resulting capabilities, not just the introduction of additional capabilities. Here too, EFT changed the way things were being done at many of the PME institutions. The role of the transformation chairs was innovative in that the faculty focused on research and instruction that advanced the department's transformation/change agenda. There was previously no faculty dedicated to this area of instruction. The schools were permitted to focus on areas that best suited their mission: leadership development, technological change, etc. Another innovation of resulting capabilities was the use of the transformation case studies in the classroom. Although prevalent at many of the nation's leading academic institutions, the approach of taking transformational lessons learned from current operations and using them in the classroom as case studies was new to many of the PME institutions. Both the transformation chairs and the short courses were responsible for introducing this instructional technique.

Two other traditional outputs are resulting changes in force structure or business processes. The EFT initiative had no direct impact on either of these, nor was it intended to. It was expected that Service schools would provide funding to continue the transformation chairs (which would have required programmatic, not force structure changes) but that did not occur. Instead, in instances where chairs continued beyond the expiration of OFT funding, they were assigned other responsibilities and assumed the role of transformation chair as an ancillary duty.

2. Evaluating the Effectiveness of the EFT Initiative

Another measure of program performance is the extent to which it achieves the

goals of an organization, otherwise defined as effectiveness.⁴⁵¹ The determination of whether goals are met can be based upon either prescribed or derived goals.⁴⁵² Prescribed goals are those organizational or program goals that are clearly advertised and stated in documents or public pronouncements. Derived (or functional) goals are developed by the researcher from a variety of sources based upon logical consistency. There were a number of prescribed goals that the EFT initiative sought out to achieve. The extent to which it actually achieved these goals or its contribution to them is beyond the scope of this effort since the impact of the initiative will take years to realize, and even then be very difficult to measure. However, the alignment of EFT with these goals is clear and evaluated below.

The EFT initiative sought to achieve a number of departmental goals outlined in capstone guidance documents. The network-centric warfare focus of the initiative was aimed at achieving one of the six transformation goals outlined in the 2001 *QDR*, “Leveraging information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture.”⁴⁵³ NCW is central to achieving this goal and the initiative set out to accomplish it through the creation of short courses, case studies, and curricula aimed at imbuing future military leaders with an understanding of these capabilities.

⁴⁵¹ See Brewer and Selden, “Why Elephants Gallop,” 689 or Seashore and Yuchtman, “A System Resource Approach to Organizational Effectiveness,” 891-892.

⁴⁵² Seashore and Yuchtman, “A System Resource Approach to Organizational Effectiveness,” 893.

⁴⁵³ *Quadrennial Defense Review Report* (2001), 7.

Another goal that EFT supported was conveyed in DoD's 2003 *Transformation Planning Guidance* that included as one of three elements of its strategy for transforming *transformed culture* and, to achieve it, noted "joint education is fundamental to creating a culture that supports transformation."⁴⁵⁴ The EFT initiative directly accomplished this through the creation of the transformation chairs and the changes to the curricula and courses that were a part of it.

Education for Transformation went beyond advancing the department's transformation goals and demonstrated flexibility as DoD's goals shifted from broadly advancing transformation to targeting key areas for capability development. For example, the 2005 *National Defense Strategy* warned of increasingly irregular challenges from terrorists and other non-state actors and called on the department to "reorient our military capabilities to contend with such irregular challenges more effectively."⁴⁵⁵ To help achieve this goal, the transformation chairs were involved with efforts to reorient the force (through PME) to focus on these irregular challenges. An example of this is was a February 2007 conference hosted by the chairs in Monterrey, California that addressed these emerging challenges and ways to better address them in the curricula. It was observed at the time that, "[The Transformation Chairs] are involved in efforts to spur research and influence curricula at DoD educational institutions to realize former Defense

⁴⁵⁴ *Transformation Planning Guidance*, 7-8, 21.

⁴⁵⁵ *The National Defense Strategy of the United States* (2005), 3.

Secretary Rumsfeld's vision of a military that is more prepared for and capable of addressing 21st century challenges."⁴⁵⁶

The chairs' flexibility in addressing the department's changing priorities is also seen in its more recent focus on the Chairman of the Joint Chiefs of Staff's renewed emphasis on joint education. In his July 2012 white paper on joint education, the Chairman, Army General Martin Dempsey, wrote that "we must learn and properly place in context the key lessons of the last decade of war and in doing so, we will prepare our leaders for what is ahead—not just what is behind us."⁴⁵⁷ Dempsey presents a clarion call for strengthening joint education and presents a vision for doing so. In response, the transformation chairs agreed to build upon themes in their 2011 conference in Rome, and conduct a conference focused developing an approach for realizing the vision the Chairman laid out in his paper. The conference is scheduled for June 2013 in Washington, D.C.

3. Evaluating the Impact of the EFT Initiative

The final measure of performance assessed by this study is the impact of a program/organization or its endurance.⁴⁵⁸ That is, the longer-term result of the initiative and the lasting effect it had. This reveals whether a program is deemed valuable outside

⁴⁵⁶ Keith Costa, "'Transformation Chairs' Meeting to Cover Irregular Warfare, Stability Ops," *Inside the Pentagon*, January 25, 2007.

⁴⁵⁷ Martin E. Dempsey, "Joint Education White Paper," July 16, 2012, 3. Available at <http://cole.fuqua.duke.edu/Joint%20Education%20White%20Paper.pdf>, last accessed August 2012.

⁴⁵⁸ Lyden, "Using Parsons' Functional Analysis in the Study of Public Organizations," 64.

of the original sponsoring organization—OFT. A program’s endurance is also measured by the form of the initiative (sponsorship, size of program, etc.).

Of the three initiatives surveyed in this study, the EFT initiative struggled the most in the post-OFT transition. As evidence of this, the funding for the program dropped precipitously with the closure of the office. Whereas ORS and Stiletto received follow-on funding through other organizations—this was not the case for EFT. In fact, the PME institutions with transformation chairs were unwilling to provide funding beyond the original OFT sponsorship of three years. Those schools that maintained their chairs did so by assigning them other responsibilities while permitting their continued involvement in the network as an ancillary duty.

That said, the chair’s network continued to survive well-beyond initial OFT sponsorship (and into 2013) due to the initiative of the remaining members and the perceived need throughout the community. It was helped by the continuing interest of allied nations in transformation of their militaries as evidenced by the continuing active participation of several of these countries in the network. The remaining network also worked to keep the term *transformation* alive in a defense community that had largely abandoned it. This abandonment was noted by some of the transformation chairs whom had an opportunity to engage then Under Secretary of Defense for Policy, Michelle Flournoy, on the importance of keeping the term alive given allied interest in promoting it.⁴⁵⁹ However, they were rebuffed and remain some of the last champions of the

⁴⁵⁹ According to an author interview with a former Transformation Chair on February 19, 2013.

transformation. The chairs' efforts "helped to change the attitude of faculty" towards transformation and large-scale military change.⁴⁶⁰

The extent of the longer-term impact or endurance of the EFT initiative is yet to be seen and may take years to determine. However, the willingness on behalf of the chairs to assume it as an additional duty suggests the international transformation chairs network will survive into the future. Certainly, its willingness to adapt to changing DoD priorities will help it to remain relevant and demonstrate that it continues to be one of the more responsive elements of PME.

E. Summary

Recognizing that military training and education are among the most direct means of transforming the culture of the broader DoD, in 2002 the Office of Force Transformation launched its Education for Transformation initiative. The initiative involved a multi-faceted approach to developing new knowledge and diffusing it throughout the schools using targeted research, a network of transformation chairs, and new courses and curricula. The result was a network of faculty across the United States and allied nations, a series of cases studies, and instances where curriculum had been modified to better addressing emerging national security challenges.

The entire initiative transitioned to OSD(P)/FT&R at the end of 2006 when OFT was closed. When the funding tapered off in 2010, so did the EFT initiative. However, the international transformation chairs continues (into 2013) under largely voluntary participation by member institutions in the United States and allied nations. The

⁴⁶⁰ According to an author interview with a former Transformation Chair on February 7, 2013.

program received funding totaling approximately \$12 million from 2002-2010 with \$7 million allocated to the chairs and \$5 million to other educational initiatives. Based upon the criteria applied in this study—productivity, effectiveness, and impact/endurance—the EFT initiative was moderately successful. Only moderately, because its effect on the military are more indirect and take time to demonstrate with any confidence. What's more, the program did not outlive its original sponsor and instead continues on a largely voluntary basis (which is a credit to the remaining members of the chairs network and its leadership). That said, EFT was productive in that it yielded a number of outputs for the investment of only \$12 million over eight years. The outputs included transformation chairs at thirteen PME institutions, a series of new courses and case studies introduced to instruction, selected changes to curriculum, and international conferences resulting in books on pressing national security issues.

How effective EFT was in actually achieving the department's goals will take years to determine and, even then, not definitively. However, the program was well aligned with DoD's goals for transforming and OFT's own stated goals. The program struggles when evaluated in terms of its impact or endurance. This is usually measured to the extent that the program continued under some auspices or even expanded. That did not occur with EFT as the funding tapered off with the closure of OFT and no sponsors stepped forward to fund the initiative. The transformation chairs exist today on a largely voluntary basis but that alone does demonstrate the staying power of the concepts they promoted and the fact they are one of the remaining stewards of the term *transformation*.

Several factors contributed to the success OFT and OSD(P)/FT&R did have with advancing the EFT initiative. The first was the amount of leadership time invested by the Director of OFT in negotiating with the PME institutions to host transformation chairs. All of those interviewed who were familiar with EFT attributed its success (at least in part) to this. Without the connection Cebrowski had to several of the presidents of the schools, it is uncertain whether the membership would have been as large as it was. Another contributor to EFT's success was the effective management of the program by OFT staff responsible for overseeing it. They doggedly pursued memorandum of agreement and put funding in place to advance the EFT initiatives while coordinating with the Pentagon bureaucracy (e.g., the Joint Staff J7 and USD(Personnel and Readiness)) that had equities at stake. A final key to success of note was the initiative of the individual member institutions and the chairs themselves. Several of them were entrepreneurial in spirit and embraced DoD's vision of transformation and thus were able to expand the network overseas and also keep it alive after funding for it ran out. These factors for success were all internal to the program owing nothing (other than funding) to external forces or actors.

The preceding chapter analyzed OFT's experience with three of its leading initiatives to identify areas of strength, weakness, and overall performance. The final chapter looks across the office's portfolio and these three cases to identify key factors contributing to its success (and failure) in catalyzing change throughout the department and offers policy implications and a framework for future application.

CHAPTER EIGHT: FINDINGS AND RECOMMENDATIONS

And now, in this wedge-like sliver of time at the beginning of a new age, it is the United States that now serves as the fulcrum for the future of military affairs. What the United States does, and does not do, to and with its military will greatly affect world affairs, the American economy, and American politics of the first decades of the 21st century. But it will do more. It will define the character of military competition and who is likely to prevail in the first half of this new century.⁴⁶¹

Arthur K. Cebrowski, 2005
Military Transformation

In September 1999, Presidential candidate George W. Bush, in a speech to the Citadel, spoke of not only securing current day peace but to also, “take advantage of a tremendous opportunity—given few nations in history—to extend the current peace into the far realm of the future.”⁴⁶² He went on to argue that the way he would accomplish this was by *transforming* the nation’s military. As President, Bush further enshrined this concept in his 2002 *National Security Strategy*, which was predicated upon a military that had been radically changed to better address the challenges ahead. Bush’s Secretary of Defense, Donald Rumsfeld, set out to build “a culture of continual transformation, so that our armed forces are always several steps ahead of any potential adversaries.”⁴⁶³

⁴⁶¹ Cebrowski, *Military Transformation*, 5.

⁴⁶² Bush, “A Period of Consequences.”

⁴⁶³ *Transformation Planning Guidance*, 1.

The Office of Force Transformation was DoD's primary vehicle for achieving its transformation goals and catalyzing change throughout the department. This research has examined the office, its portfolio, and its leading initiatives to address the question of whether it was successful in its pursuits and to gain insights into the use of independent offices in promoting organizational change. The first chapter presented background on the department's transformation agenda and its centrality to the 2002 *National Security Strategy*. The study's methodology, including research design, data collection, and analytic framework are presented in the second chapter. Chapter Three provides a review of the leading literature relevant to this investigation in the fields of military innovation, defense resource management, and organizational change. The origin of transformation and its evolution into President Bush's transformation agenda are traced in the next chapter. Also in the chapter is a history of the Office of Force Transformation, its portfolio, and its place in the larger community of actors involved with transforming the U.S. military.

The subsequent chapters apply the evaluative criteria established in Chapter Two to three of the office's leading initiatives to determine whether they were successful. Chapter Five evaluates OFT's Operationally Responsive Space initiative—a small satellite program that was later transitioned to the Air Force. The all-composite M-hull watercraft known as Stiletto that the office conceived and developed is examined in Chapter Six. The final program analyzed in Chapter Seven is the Education for Transformation initiative that advanced a variety of programs to change the way professional military education is employed to prepare future military leaders.

This chapter looks across the cases presented to answer the primary research question: Was the Department of Defense Office of Force Transformation successful at advancing key transformation initiatives? Addressing this will reveal important lessons that may benefit leaders implementing change agendas. To answer the question and also to explore other elements important to affecting change, the following issues are also addressed:

1. What were the Office of Force Transformation's key initiatives? Lesser initiatives?
2. Would these initiatives have been advanced had OFT not pursued them?
3. Did the political and bureaucratic prerequisites exist for the office to successfully affect change in the larger Department of Defense?
4. What lessons from OFT are generalizable to affecting change in other complex organizations?

These questions have already been addressed in part in the preceding analysis but this chapter further explores the various factors at play to provide clear answers to these questions and also offers a framework for further analysis. The policy implications of this research are presented along with areas for further research.

The first (Section A.) of the following sections directly answers the question of whether OFT was successful at advancing its key initiatives by applying the evaluative criteria (presented in Chapter Two) to each of the cases explored. The next section (Section B.) examines the key variables influencing change (also presented in Chapter

Two) in each of the cases. The third section (Section C.) offers a theoretic framework followed by potential policy implications, both based upon the preceding research. Finally, areas for further research are identified.

A. Evaluating the Office of Force Transformation

To address the primary research question of whether or not OFT was successful at advancing key transformation initiatives, this study employs an evaluative case study method. As described in Chapter Two and by Barzelay and others, such a method is intended to determine whether an initiative was *good* or, in the case of this research, *successful*. An evaluative framework facilitates objectivity of analysis and replication of results.

The criterion used in this study to assess the key initiatives of the Office of Force Transformation and determine whether it was successful at advancing them is *performance*. Organizational theorists and administrative scientists alike widely consider performance as the ultimate criterion in assessing an organization and determining its success.⁴⁶⁴ The literature for judging a program's performance was reviewed finding that many of the leading researchers agreed with Bennis who argues that the multitude and changing nature of an organization's goals calls for multiple methods for measuring performance.⁴⁶⁵ A number of methods exist for evaluating performance across a variety

⁴⁶⁴ Seashore and Yuchtman, "Factorial Analysis of Organizational Performance," 377.

⁴⁶⁵ Bennis, *Beyond Bureaucracy*, 44.

of criteria. The most common criteria and how they are operationalized for application in this study are:

- **Productivity.** This traditional performance measure is defined as some comparison of program *input* (or costs) versus its *output* (or results).⁴⁶⁶ The purpose is to assess the return on investment of a program to determine whether it was worth pursuing. The inputs above are weighed against outputs to evaluate the productivity of an initiative.
- **Effectiveness.** Another measure of organization or program performance is the extent to which it achieves the goals of an organization, otherwise defined as *effectiveness*.⁴⁶⁷ This is ultimately a judgment of the investigator based upon data that is analyzed. The determination of whether goals are met can be based upon either *prescribed* or *derived* goals.⁴⁶⁸
- **Impact.** The final measure of performance assessed by this study is the impact of a program/organization or its endurance.⁴⁶⁹ That is, the longer-term result of the initiative and the lasting effect it had. This reveals whether a program is deemed valuable outside of the original sponsoring organization—OFT.

⁴⁶⁶ Van de Ven, “A Framework for Organizational Assessment,” 74-75 or Imershein, “Organizational Change as a Paradigm Shift,” 33-43.

⁴⁶⁷ See Brewer and Selden, “Why Elephants Gallop: Assessing and Predicting Organizational Performance in Federal Agencies,” 689 or Seashore and Yuchtman, “A System Resource Approach to Organizational Effectiveness,” 891-892.

⁴⁶⁸ Seashore and Yuchtman, “A System Resource Approach to Organizational Effectiveness,” 893.

⁴⁶⁹ Lyden, “Using Parsons’ Functional Analysis in the Study of Public Organizations,” 64.

This study applied each of these performance criteria to three of the office's leading initiatives—Operationally Responsive Space, Project Stiletto, and Education for Transformation—to evaluate whether the initiatives were successful. To offer a more definitive answer to the research question, the results of the application of the criteria to each case is summarized below along with an assessment of the office's overall portfolio (as presented in Chapter Four).

1. The Performance of the ORS Program

Applying the performance criteria of productivity, effectiveness, and endurance, the ORS program performed well and was successfully developed and advanced by OFT and its successor organization. It was a highly productive program costing the department (through direct funding and congressional allocations) \$800 million from 2003–2012. It initially required only two–three program managers at OFT but the staff expanded to over twenty when the Air Force assumed responsibility. The program received no leadership attention from Secretary Rumsfeld but considerable time from OFT's director. For these inputs, the program produced eight tactical satellites (four attributable at least in part to OFT, four the product of the Air Force) at a unit cost nearly an order of magnitude less than the average traditional satellite. It also yielded technological advances in the form of the standard bus and demonstrated how responsiveness can support ongoing operations. The program also demonstrated a streamlined development and acquisition process that produced deployable satellites in eighteen months versus the three to five year average of traditional satellites.

The ORS program also met the other two performance criteria—effectiveness and endurance. Based upon its alignment with departmental goals, the ORS program can be evaluated as effective. It supported the 2001 *QDR* goal of strengthening space capabilities, the OFT goal of delivering transformed capabilities, and directly supports the U.S. strategy of addressing threats from China (in particular, anti-satellite threats). However, determining definitively the extent to which these goals are met will take years (given the time to technology maturity, its future employment, and whether it influences additional changes to the military). The ORS program also demonstrated its endurance and impact several ways. First, it was transitioned to a permanent program office and saw its funding increase dramatically. Next, according to multiple sources, ORS sped the development of tactical satellites by ten–fifteen years. Lastly, even though the ORS program office was scheduled to close in 2013, other Services showed interest in establishing their own offices.

Taken together, the ORS program performed well against these criteria and was successfully advanced by OFT. It did so due, in large part, to a clear vision and carefully managed requirements from the outset. In addition, the unique leadership provided by the director along with the organizational arrangements and partnerships contributes to the program's success.

2. The Performance of Project Stiletto

Again applying the performance criteria of productivity, effectiveness, and endurance, like ORS, Project Stiletto performed well and was successfully advanced by OFT and its successor organization. Whereas ORS was developed using largely off-the-

shelf technologies, the M-hulled, all-composite vessel known as Stiletto was developed entirely by OFT (through its shipbuilder M Ship Co) and employed in a series of experiments and exercises. It was a very productive program costing only \$12 million to build and a total of \$31 million over the life of the program, 2004–2013. It was maintained by one or two program managers, the ship’s operator, and the contractors responsible for building Stiletto. The program received no leadership time from Secretary Rumsfeld and little time from OFT’s director, once the program was underway. The result was a new vessel unlike any that had preceded it, which demonstrated the benefits of leveraging information through its electronic keel. Testing and experimenting with Stiletto yielded new concepts for employing such watercraft in both anti-drug and countermining operations. In addition, even after the dissolution of OFT, it continued to serve as a testbed permitting vendors to field their technologies more quickly. Much like ORS, Stiletto demonstrated the ability of acquisition processes to be adapted to more rapidly fielded advanced capabilities instead of waiting years, as required by the current process.

When evaluated against the other two criteria—effectiveness and endurance. Stiletto also performed well. It was effective in that it addressed several of the department’s goals: one of the 2001 *QDR* goals pertaining to information, surveillance and reconnaissance and also two of the office’s own goals—transformed capabilities and network-centric warfare. Stiletto would certainly have been more effective had it been introduced into the fleet in larger numbers, but the single vessel alone demonstrated utility to the Navy. It also had a long-term impact on the department and endured beyond

OFT. The program successfully transitioned to a successor office where it continues to receive funding. More importantly, it prompted discussion in the larger Navy about future naval force structure and the use of smaller vessels as part of naval strike groups.

Based upon these criteria, ORS performed well and was successfully advanced by the office. This was due to a variety of factors. First, like ORS, Stiletto leveraged unique organizational arrangements that brought together both operators and developers to rapidly field a capability desired by Combatant Commanders. Next, Stiletto was able to immediately demonstrate utility to the community through a series of trials and experiments, thus helping to ensure its continuation. Lastly, unlike ORS, Stiletto was not seen as a challenge to any existing program and thus didn't draw opposition from stakeholders invested in current programs (although few showed interest in changing their programs to adopt Stiletto).

3. The Performance of the Education for Transformation Initiative

When applying the same performance criteria to the Education for Transformation initiative, the results are not as clear as ORS or Stiletto. The primary reasons for this were that EFT was not as tangible as either of them (given it didn't produce a technology) and its objectives were broader since it was aimed at transforming the culture of DoD through the professional military education system. It was a moderately productive program costing only \$12 million from 2002–2010. Of these funds, approximately \$7 million was spent on the Transformation Chairs program, and the remaining \$5 million on other educational initiatives (short courses, cases studies, etc.). The initiative involved approximately sixteen staff including two–three program managers and chairs at thirteen

institutions. As with ORS and Stiletto, EFT received no leadership attention from Secretary Rumsfeld but did require the investment of significant time from Admiral Cebrowski to get the chairs established at each of the schools. The program produced increased course offerings at participating institutions focusing, in particular, on network-centric warfare and emerging national security challenges. It succeeded at getting some of these concepts into the regular curriculum. The EFT initiative also gave rise to and maintained the network of Transformation Chairs. These chairs helped to promote transformation through instruction and research. They also comprised a network of faculty that expanded overseas, which met regularly and produced a series of publications and contributed to DoD thinking on topics such as strategic *trends and shocks*.

The initiative was effective to the extent that it supported several of the department's major goals, but its contribution to accomplishing them will take years to determine (since the program was aimed at the educational institutions). The program supported one of the 2001 *QDR* goals through its focus on network-centric warfare. Furthermore, EFT supported the *TPG* goal of achieving a *transformed culture*. It also demonstrated flexibility in support of changing departmental priorities on irregular warfare and the Chairman of the Joint Chiefs of Staff's more recent attention to joint training and education. Where EFT struggles is when evaluating its long-term impact or endurance. The purpose of the three-year funding for the Transformation Chairs at participating schools was to demonstrate their utility so that the schools would allocate resources to them once OFT funding expired. That did not occur and OFT funding withered up and schools did not provide follow-on funding. The chairs network shrunk

but continued into 2013 with members including allied nations. It survived only through faculty assuming other positions at the institutions and assuming the Transformation Chair role as an additional duty.

Based upon these criteria, OFT was only moderately successful at advancing the EFT initiative and, by some measures, failed to have the long-term impact on institutions that it had intended. The success it did have can be attributed to three primary factors. First, the significant amount of leadership time Admiral Cebrowski invested to get the program established. Next, was the diligent management of the program by OFT staff on a day-to-day basis. And lastly, the EFT initiative (and the Transformation Chairs, in particular) continued into 2013 due to the entrepreneurial innovation of the remaining chairs that maintain the network on a largely voluntary basis.

4. Overall Performance of OFT

The above cases demonstrate that OFT was generally successful in advancing its key initiatives, despite all of the external factors otherwise militating against it. However, it is important to also look at the office's performance in aggregate, across its portfolio from 2002–2006. During that time, it was very productive, especially when compared to other DoD programs. Funding for OFT over that period totaled approximately \$178 million. In addition to supporting its various programs, this funding covered a staff of approximately twenty-five military, civilian, and contractors. Although it would have benefited from considerably more leadership attention than it received, Secretary Rumsfeld spent virtually no time with OFT leadership or advancing OFT initiatives. With this investment of time and resources, the office produced a wider range of outputs. Most

notably, they pursued well over one hundred separate initiatives from 2002–2006 ranging from minor studies to major technological capabilities (such as TacSat, Stiletto, etc.). As part of this, OFT’s work resulted in several major innovations in addition to the cases investigated for this study such as Project Sheriff (a non-lethal ground system for addressing *irregular* challenges), *sense and respond* logistics, the standard bus, the electronic keel, etc. Another major output of OFT’s efforts is the impact it had on Service programs and the fact that, according to some accounts, the Services shifted their investments over this period resulting in a “significant shift toward the transformation vision of the Secretary of Defense.”⁴⁷⁰ A final output to note is the demonstrated change in processes through the development and acquisition of both ORS and Stiletto. Neither program went through the traditional acquisition process. Instead, they showed the department that more expeditious paths to capability development exist.

In terms of the second measure of performance, effectiveness, OFT also experienced success. That is, when measured against how well its portfolio of programs were aligned with national and departmental goals, both prescribed and derived, OFT proved to be rather effective. As previously addressed, determining exactly how effective or how well the office achieved the goals is beyond the scope of this study given that it will take many years to determine. Evaluating the multitude of changes put into motion either directly or indirectly by OFT will require years to unfold to see how they impact

⁴⁷⁰ “The QDR, Disruptive Challenges, and Force Transformation,” Science Applied International Corporation, undated study performed for the Office of Force Transformation (estimated 2006), 20. The findings are based upon their evaluation of Service program elements and an expert panel judging the transformational nature of the investments.

the force and the department. However, OFT's efforts were well aligned with both national and departmental goals. They supported the President's goal of transforming as expressed in both campaign speeches and the *NSS*. OFT was the only office in OSD focused exclusively on transformation. In terms of departmental goals, as demonstrated throughout this study, OFT's leading initiatives were in support of the 2001 *QDR* transformation goals. Of the six goals, the office's programs were most supportive of goals to "enhancing the capability and survivability of space systems" and "leveraging information technology and innovative concepts."⁴⁷¹ OFT also demonstrated the ability to adjust its programs according to changing departmental strategies. For example, when the 2005 *National Defense Strategy* called upon the department to focus more on irregular challenges, OFT responded by developing new programs, such as Project Sherriff (a platform for non-lethal weapons), to address such challenges. The office was also aligned well to meet its own prescribed goals: (1) transform strategy, (2) transform the force and culture, (3) implement network-centric warfare, (4) change metrics, and (5) transform capabilities. Chapter Four illustrates the alignment of OFT's major programs with these goals, including the funding.

When evaluating the office against the final measure of performance, endurance or impact, it received mixed results. It struggled in that it was unable to secure its future beyond the passing of its first director, Admiral Arthur Cebrowski, who was OFT's intellectual leader and the department's primary spokesperson for military

⁴⁷¹ *QDR* (2001), 30-32.

transformation. Although it continued for almost a year under an acting director, the decision was made by Secretary Rumsfeld to close the office. However, by some measure, OFT endured given that its programs were continued under two OSD offices—RRTO and OSD(Policy)/FT&R. For the most part, the funding for specific initiatives eventually expired, but some programs (such as Stiletto) continued to receive support from their new parent offices.

B. Examining the Key Variables in Catalyzing Change

The primary unit (the Office of Force Transformation) and the cases under investigation are all comprised of *relevant dimensions* or variables.⁴⁷² These dimensions, or variables, all offer perspectives on the cases and ultimately provide the basis for answering the research questions.⁴⁷³ For the purposes of this study, the variables fall into two categories—those variables internal to OFT and those external to the office. The variables are addressed in the context of each of the embedded cases in this study and are evaluated for the office, in aggregate, below. The main *internal* (to OFT) variables examined throughout this study include:

- **Leadership/Vision**—The role of leaders of organizations cannot be overstated. Their leadership combined with the strategic vision they outline for the organization can be important. Indeed, OFT’s Director, Vice Admiral Cebrowski, played a very large role.⁴⁷⁴

⁴⁷² Gerring, “What is a Case Study and What is it Good For?” 342.

⁴⁷³ King, Keohane, and Verba, *Designing Social Inquiry*, 51.

⁴⁷⁴ For example, see Blaker, *Transforming Military Force*.

- **Mission/Goals**—The stated mission of an organization also impacts its direction. How well the mission of an organization supports its parent organization is critically important.
- **Culture**—The organizational culture plays a role in the effectiveness of an organization and how well it works with other organizations. Culture can be either a great strength or weakness in pursuit of its mission.
- **Structure**—How an organization is structured and its relationship to other organizations in its sphere affect its functioning and ultimately, success or failure. It interacts both positively and negatively with other key variables.
- **Personnel**—Either collectively or individually, an organization's personnel affect its ability to pursue its goals. Their composition, skills, etc. may all contribute to their effectiveness.
- **Resources**—An organization's agenda is often a function of the financial resources it has at its disposal. Measuring the amount of resources both at a macro and micro level can offer explanation about the performance of the organization and its specific initiatives.

In addition to the internal variables above, there are also variables external to OFT that must be explored as part of the case studies. Many of the variables are similar to those internal variables listed above, except at the department level. The main *external* (to OFT) variables examined throughout this study include:

- **External Variables**—Six are similar to those outlined above, except at a DoD/national level: (1) Leadership/Vision, (2) Mission/Goals, (3) Culture, (4) Structure, (5) Personnel, and (6) Resources.
- **Other Actors**—External environments frequently involve multiple organizational actors pursuing similar goals. In the case of OFT, there were several outside organizations (e.g., the Services, Combatant Commands, defense agencies, etc.) that were assigned major portions of their original portfolio.
- **External Shocks** (i.e., acute events)—These are occurrences outside of the department that were unplanned but have a significant impact on the organization. In this context, examples include the attacks of September 11, 2001 and ensuing operations in Afghanistan, Iraq, and elsewhere.

1. Examining Key Internal Variables

There are six variables, or dimensions, that were investigated throughout this study and applied to the Office of Force Transformation and its internal operations. These are addressed in the context of the cases presented in preceding chapters but are addressed explicitly, by variable, in this section. The following section addresses the same variables, and others, in examining actors external to the office.

Leadership. The office benefited from a strong leader in retired Admiral Arthur Cebrowski. Cebrowski came to the position with a career of experience in innovative thought and was widely recognized for it. He was engaged in efforts across the office's portfolio, but some more than others. For example, Cebrowski was very involved with promoting ORS whereas he was less involved with Stiletto, once it was under

development. He saw these initiatives and others as physical instantiations of his theory of warfare.⁴⁷⁵

Mission and Goals. Although some staff suggested that the office's goals were a moving target and routinely shifting, it had a clearly articulated set of prescribed goals that served to organize and orient its efforts over the years. The entirety of the office's portfolio could be directly aligned with these goals.

The goals and the office's mission were well aligned with both national and departmental goals in that it was the only office in OSD with the sole responsibility for advancing the President and Secretary's transformation agenda (see Chapter Four for direct alignment of OFT to departmental goals). However, it is difficult to determine how well the office achieved the Secretary's vision for transformation because several observers contend that Rumsfeld lacked such a vision.⁴⁷⁶

Culture. As demonstrated through its wide range of initiatives, the office promoted a culture of innovation and risk taking. They pursued a series of what Cebrowski called "big bets," which were seen as the intersection of *non-consensual change* (areas where there was not yet agreement across the community) and *unarticulated needs* (capabilities that had not yet been demanded, but held promise for advancing the state of warfare).⁴⁷⁷ As a result, the staff was encouraged to push the limit

⁴⁷⁵ According to an author interview with a former OFT program manager on March 29, 2012.

⁴⁷⁶ This view was expressed by several experts interviewed for this study and, in particular, by an interviewee on March 28, 2012.

⁴⁷⁷ According to briefings produced by OFT from 2004-2006.

(of mainstream thinking) and be entrepreneurial in their pursuit of transformational initiatives.

Even though Cebrowski eschewed formal DoD processes such as (formal) requirements generation and the acquisition process, he promoted the concept of the office as both a think *and* do tank. That is, they were responsible for both innovating and introducing new ideas but also engaging in their pursuit in the Pentagon and influencing formal DoD processes. They did this through the management of the Transformation Roadmap process, issuance of concept development guidance, and other similar activities.

Structure. The office was placed within OSD reporting directly to the Secretary of Defense. Given this, OFT relied exclusively on access to the Secretary for its bureaucratic strength and authority. This was especially true given that the statutory document prescribing its role in the department, the DoD Directive, went unsigned meaning that OFT had no official standing in DoD. Therefore, OFT's only formal basis traced back to the 2001 *QDR* that established the office. Most of those interviewed indicated that Secretary Rumsfeld provided virtually no guidance to OFT and rarely, if ever, met with its director. In fact, when it came to Cebrowski's retirement, Rumsfeld didn't even attend. Therefore, it was the perception of OFT ties to the Secretary, not actual ties, which afforded it the limited authority it did exercise over DoD components.⁴⁷⁸

⁴⁷⁸ According to an author interview with a former OFT assistant director on February 21, 2012.

Internally, the structure of OFT was flat with a director, a deputy, and three assistant directors, each with a distinct portfolio. The subordinate staff were loosely tied to each of the assistant directorships but regularly moved between them. Such personnel shifts led to a competition for staff with the best of them gravitating to a few of the highest priority initiatives.

Personnel. The office was staffed by a mixed group of civilian and military personnel. Of the civilians, most were government employees but some were on-site contractors. Collectively, they had a diverse set of backgrounds from operations to engineering and the sciences (both natural and social sciences). Many of the original staff had ties to Cebrowski from earlier in his career and left their previous positions to join him at OFT. This demonstrates an intense loyalty to Cebrowski but also an interest on behalf of much of the staff to advance their careers by supporting one of the department's supposed top priorities—transformation.⁴⁷⁹ However, serving OFT proved to do little for the professional careers of its civilian staff given that they were all forced to transition to other offices when the office was closed. Of the military officers on assignment, only two made general officer after leaving OFT. This apparent failure to promote alumni of the office, either civilian or military, to leadership positions elsewhere was noted as a factor limiting its development and contributing to its demise.⁴⁸⁰ This is because other

⁴⁷⁹ According to author interviews with former OFT staff and leadership on February 15, 2012 and March 8, 2012.

⁴⁸⁰ According to an author interview with a former senior OSD official on March 29, 2012.

independent offices (i.e., the Office of Net Assessment) “graduated” their staff to positions of authority where they became outspoken supporters of their prior office.

Resources. Relative to the rest of DoD, OFT’s budget was modest. With a base budget of approximately \$25 million and additional funds from Congress, earmarked for specific initiatives, OFT was small when compared to other organizations with similar advanced research missions (e.g., DARPA, Director, Defense Research and Engineering, etc.). Some involved with the stand-up of the office indicated that Rumsfeld originally wanted to offer OFT more resources. However, Cebrowski declined additional funding believing it would grow the office beyond what he believed was an optimal size to achieve its mission and saying that “malignancies arise from having too much money.”⁴⁸¹

Despite the budget size, the office was able to develop an extensive portfolio of programs from rather small research projects to large systems development. The portfolio consisted of over one hundred programs managed across the office’s three assistant directorates.⁴⁸² Certainly, with more resources, OFT could have pursued more initiatives and those initiatives it did more aggressively. This may have increased their success and perhaps accelerated the changes the office was promoting. Several of those interviewed noted that it should have been given additional resources to both accomplish more and

⁴⁸¹ According to an author interview with a former OFT senior official on March 15, 2012.

⁴⁸² The three initiatives chosen for this study were selected as leading initiatives based upon preliminary review of the literature and were then confirmed through pilot interviews and then again through the twenty experts interviewed.

establish credibility in a department that associates resources with influence and authority.⁴⁸³

2. Examining Key External Variables

The preceding analyzes the key dimensions relevant to organizational change by focusing on the variables internal to the office. To understand how and why it succeeded or failed, it is also important to examine the same variables external to the office and the interaction between the internal and external variables. In addition to the same six variables analyzed above, external variables also include *other actors* (outside of the department) and *external shocks*, or acute events that affected OFT's ability to advance its initiatives. These variables are addressed in the context of the cases presented in preceding chapters but are addressed explicitly, by variable, in this section.

Leadership. As apparent in the literature presented throughout this study, strong leadership is essential to any organization, especially those pursuing change agendas as DoD was throughout Secretary Rumsfeld's tenure. However, Rumsfeld afforded very little time to OFT or its director once the office was established. He provided very little guidance or assistance to OFT, even as the bureaucracy resisted the official DoD directive. Furthermore, Rumsfeld did little to clarify his vision of transformation and

⁴⁸³ According to author interviews with former OFT staff on February 28, 2012, March 19, 2012, and April 27, 2012.

instead began to label everything occurring in ongoing wars as transformational thus further diluting the meaning of the term.⁴⁸⁴

Part of the Secretary's waning interest in transformation may have to do with flagging interest from the primary progenitor of the concept, President George W. Bush. While he borrowed the term from earlier thinking done by defense luminaries, the President popularized it through a series of campaign speeches and then enshrined it in his first *National Security Strategy*. However, since that point, he failed to feature the concept in any subsequent speeches on national security. Therefore, it is no surprise that his appointee for Secretary of Defense was no longer the ardent proponent for it he may have been at the outset.

Fortunately for OFT, there was a handful in senior leadership in DoD who embraced the concept and was willing to provide OFT with aegis. Chief among them was Rumsfeld aide Kenneth J. Krieg who came to the Pentagon first to serve as chair of the Senior Executive Committee, and then became Director, Program Analysis and Evaluation, and finally Under Secretary of Defense for Acquisition, Technology, and Logistics. Krieg, while maybe not the visionary that Cebrowski was, embraced the concept of reforming the department and equipping the force with advanced capabilities. He assisted OFT by being an advocate for their initiatives inside the Pentagon.

Mission and Goals. The stated mission and goals of an organization are defining elements that shape the rest of the operation. Although it was stated as a priority by the

⁴⁸⁴ According to an author interview with a former senior OSD official on March 29, 2012. Perhaps the most notable example of labeling things as transformational was Rumsfeld's praise of U.S. forces on horseback in Afghanistan armed with devices for lazng targets for aerial attack.

President and then showcased in the *National Security Strategy*, military transformation faded from national view shortly thereafter. It was left to the Department of Defense to execute, which it did by presenting six transformation goals and four pillars of transformation in its 2001 *QDR*. These provided a general vision for transformation but offered few specifics, instead leaving that to subsequent guidance documents. The term transformation itself wasn't defined until the release of the 2003 *Transformation Planning Guidance* and even then it was a nebulous term that was the product of lengthy wrangling among stakeholders from across the department.

Relevant elements of the department used these documents to guide their development of future capabilities but were eager for more specifics. None were forthcoming since the department issued little guidance on transformation since 2003 and the topic received scant attention with the release of the 2005 *National Defense Strategy* and even less in the 2006 *QDR*. As the stated transformation goals began to disappear from sight, alignment of OFT goals to those of the department's became more challenging as a result.

Culture. The department's organizational culture has frequently been called *risk averse* relying heavily on traditional bureaucratic processes such as requirements generation, acquisition, and Service programs to preserve the status quo.⁴⁸⁵ This is because the stakeholders all have major equities to preserve in their force structure, programs, or staffs. It is this organizational culture that is typically resistant to change

⁴⁸⁵ Zhivan J. Alach, *Slowing Military Change* (Carlisle, PA: U.S. Army Strategic Studies Institute, 2008), 34–35.

and this was no different in the case of OFT. Indeed, according to those involved with the office and its initiatives, the Military Services saw it as a major threat.⁴⁸⁶ This is because the initiatives advanced by OFT were often seen as competing with Service programs. Some referred to the “enormous bureaucratic inertia” that amassed against OFT.⁴⁸⁷ This behavior on the part of the bureaucracy amounted to what Chris Argyris referred to as organizational defensive routines, which bureaucracies exercise when trying to avert change.⁴⁸⁸

Structure. The structure of the organization external to OFT is an important dimension to understand given it was this structure that the office was intended to catalyze change in. The larger Department of Defense is a confederation of components wielding great influence with the Secretary of Defense sitting atop. It is the four Military Services (organized into three departments) that exercise great influence given they have the financial resources, staff, and organizations to individually contend with OSD, and collectively, the Services represent a seemingly immovable force. However, it is the Secretary and his staff who are the final authority on nearly all defense matters (according to Title X, U.S. Code). Within OSD though, OFT was not necessarily well positioned to affect change since it was one of many niche offices that reported directly to the Secretary. That meant it relied on the Secretary’s time and influence, not that of an

⁴⁸⁶ According to a February 13, 2012 author interview with a senior defense analyst and close observer of OFT.

⁴⁸⁷ According to a March 28, 2012 author interview with a senior defense analyst and key figure in transformation. See also Came and Campbell, “The Dynamics of Top-Down Organizational Change,” 425.

⁴⁸⁸ Argyris, *Knowledge for Action*, 15.

Under Secretary's, to influence the Services. Since OFT received neither from the Secretary, their direct influence of the Services was limited. While some observers casually believe that the mission of changing the organizational culture of DoD (as OFT was chartered in part to do) was a straightforward task, others closer to the inner workings of the department have noted that it "is not an organization, it is an entire economy."⁴⁸⁹

Personnel. The DoD senior leadership responsible for leading change and advocating for OFT is also an important dimension of transformation.⁴⁹⁰ As addressed elsewhere in this study, the concept of transformation predated the Rumsfeld era and even President George W. Bush, but those involved with developing it were not selected (or not available) to assume senior positions in the department. It has been widely reported that not even Secretary Rumsfeld was Bush's first choice for the position, nor was he steeped in the emerging orthodoxy of the President's change agenda.⁴⁹¹ This was also true of Rumsfeld's senior most leadership; none of which were known for their expertise in advancing military change. This made their promotion of it difficult and left OFT without a senior-level sponsor inside of the department (with the exception of one or two noted elsewhere who assisted the office on occasion).

⁴⁸⁹ According to an author interview with a former senior OSD official on March 29, 2012.

⁴⁹⁰ The lack of background on transformation among senior leadership was seen as one of the crucial weaknesses of the department's efforts to change according to Came and Campbell, "The Dynamics of Top-Down Organizational Change," 414–415.

⁴⁹¹ Worley, *Shaping U.S. Military Forces*, 49.

Resources. The department Rumsfeld assumed responsibility for was initially well positioned financially to aggressively promote military transformation and the pursuit of advanced capabilities. It enjoyed a combination of a healthy budget and the absence of an imminent threat or ongoing contingency that would normally tax its resources. This resulted in a larger portion of DoD's resources that could be dedicated to funding transformation initiatives. Even with the onset of hostilities against Iraq in 2003 this remained true but there was growing recognition that funding would be limited in coming years. This was especially true as operations in Afghanistan began to accelerate and DoD was funding two ongoing operations. Congress stepped in to provide contingency funding (as is typical during wartime) but resources remained stretched thin and transformational programs became to be seen as a luxury that the department could not afford, not a warfighting necessity. Therefore, the fiscal climate shifted significantly from the point when transformation was introduced to the department to just a few years later when it was under attack due to lack of resources.

Other Actors. Factors impacting the performance of OFT were not limited to actors immediately surrounding the office and throughout the department. Instead, there were other actors, outside of DoD, that had an impact on the successes and failures of OFT. Chief among the external actors was the U.S. Congress many of whose members were supporters of the office and its initiatives. This resulted in needed plus-ups to OFT's budgets for key initiatives such as ORS. Through occasional hearings, Congress promoted selected OFT programs and was able to encourage their development. As the ORS case demonstrates, Congress also played a role in ensuring the transition of high-

priority OFT initiatives to appropriate offices in anticipation of the office's eventual closure.

Another external actor important in OFT's development was the defense industry and, in particular, small businesses and recent startups. In the cases of both ORS and Stiletto, it was these types of businesses that provided the innovation and responsiveness to rapidly deliver those capabilities that OFT needed. In the case of ORS, SpaceX was able to develop a launch vehicle in nearly record time (even though launch delays and other complications prevented it from deploying TacSat-1 on schedule). Stiletto too relied heavily on small defense businesses, specifically M Ship Co and Azimuth Inc., to deliver new capabilities on a short timeline.

A final external actor of note that impacted OFT was the defense media. This was the collection of industry publications that covered national security matters. They served to echo the many messages that OFT's director would convey at conferences and special events. Even at a time when certain terms or concepts were not gaining traction inside of the department, they were achieving popularity in the defense press and among national security think tanks. Leveraging the defense media in this manner was a concerted strategy employed by OFT and Cebrowski referred to this as transforming the department "from the outside in" (referring to the messaging outside of the Pentagon influencing thinking and policy within it).⁴⁹² The organized outreach campaign that OFT pursued was effective at raising its profile and conveying greater stature to the community and should be considered a lesson for future change agents.

⁴⁹² According to an author interview with former OFT staff on February 28, 2012.

External Shocks. A final dimension impinging upon OFT's performance in advancing its key initiatives were acute exogenous events (or shocks) that significantly impacted its course. The most notable of these was the emergence of two major wars—Iraq and Afghanistan (as part of the larger Global War on Terror)—which drew resources and attention away from Rumsfeld's transformation agenda. The wars' impact on resources is addressed above but equally important was the senior leader attention they drew away from transformation and the Secretary's ability to articulate his vision. According to Came and Campbell, they "layered additional challenges atop what had already been made a difficult transformation campaign."⁴⁹³

A second exogenous shock affecting OFT's trajectory was Rumsfeld's resignation in November 2006. This occurred immediately after mid-term Congressional elections led to the defeat of several Republicans, which many attributed to the war in Iraq to which Rumsfeld was closely tied.⁴⁹⁴ Although he didn't craft the transformation agenda, it was Rumsfeld's to implement and with OFT closed and the Secretary out, transformation had lost its chief proponents. Rumsfeld's successor, Robert M. Gates, showed little interest in the President's transformation agenda as evidenced by his increasingly rare references to it and his preoccupation with counterinsurgency operations in which the U.S. military was embroiled.

⁴⁹³ Came and Campbell, "The Dynamics of Top-Down Organizational Change," 415.

⁴⁹⁴ "Rumsfeld Stepping Down," *NBC News*, November 8, 2006. Available at <http://www.nbcnews.com/id/15622266/#.UUEvpdFKk0o>, last accessed August 2011.

3. Findings from Examining Key Variables

Although the performance criteria applied throughout this study provides the basis for answering the primary research question of whether or not OFT succeeded in advancing its key initiatives, the secondary research questions and deriving policy implications from OFT's experience requires an additional perspective. For this reason, and to structure the data collection to ensure consistency across cases, the internal and external variables in the preceding section were identified and applied in the collection of observations (i.e., data) across the embedded cases. According to King, Keohane, and Verba, such a structured approach using selected variables strengthens the explanatory power of small-N studies such as this one.⁴⁹⁵ By examining these variables across the cases and then aggregating them (as presented above), a number of major findings emerge, some of which conform to the literature on the topic and others that provide new insights into the challenges of catalyzing change in complex organizations such as the Department of Defense. Although there are a number of findings conveyed throughout this research, the major findings that emerged from analyzing the key variables include:

Strong leadership of change agency offers both advantages and disadvantages.

The literature on organizational change points to the importance of strong leaders in motivating change throughout the organization (see Chapter Three). The case of OFT was no different in that Admiral Cebrowski helped to raise the profile of the office and the transformation agenda because he was well known and respected throughout the

⁴⁹⁵ King, Keohane, and Verba, *Designing Social Inquiry*, 45.

national security community. The resulting high-profile position helped him to advance key OFT initiatives and exercise influence (albeit limited) over other components. However, this strong leadership was not without drawbacks. The first was that several former OFT staff indicated that it engendered a cult of personality within the office that caused a certain level of dysfunction across the organization.⁴⁹⁶ That is, much of his staff exhibited an intense loyalty to Cebrowski while others who didn't, were envious of the relationships some had with the director. This resulted in a constant jockeying for time with him and his assistants being overprotective of his time. Many of those interviewed for this study indicated these behaviors were counterproductive and unlike other organizations where they had served where their leader was important and influential, but had no such negative impact on the dynamics of interoffice politics.⁴⁹⁷ Another drawback of the strong leadership OFT enjoyed was the challenge it presented when it was time to replace its director. So much of what the office had become was associated with the standing and accomplishments of its director and DoD senior leadership was reluctant to replace him (although Cebrowski's deputy became *acting* director until OFT was closed). One former senior OSD official, involved with discussions both about the opening and closing of the office stated that Cebrowski was "the right person at the right time" and

⁴⁹⁶ According to author interviews with former OFT staff on February 15, 2012, February 28, 2012, and March 1, 2012.

⁴⁹⁷ According to author interviews with former OFT staff and close observers conducted from January 2012 – February 2013.

that others thought it best simply not to even try to replace him, and close the office instead.⁴⁹⁸

Failure to obtain sufficient attention from departmental leadership hampers pursuit of change agenda. A change agent requires some amount of time and attention from the department's senior leadership, ideally the Secretary, to advance its agenda. In the case of OFT, Secretary Rumsfeld did not afford the office much time or attention, nor did his senior leadership team. This was due to a variety of competing demands and, as Mandeles argues, "structural features of an organization limit the ability of the most senior decision makers to deal with conflicting demands simultaneously."⁴⁹⁹ This was certainly true of Rumsfeld in his management of DoD and the ongoing contingencies in Iraq, Afghanistan, and elsewhere. A majority of those interviewed believed that this lack of attention seriously hampered the ability of OFT to achieve its full potential.⁵⁰⁰ This is because the office derived its authority from access to the Secretary, of which they had virtually none. Furthermore, it was not only OFT that received scarce attention from him, but the broader transformation agenda as well.

Developing partnerships is essential to advancing a change agenda. As is evidenced throughout this study, organizational partnerships were important to OFT's success in advancing its initiatives. They permitted the office to overcome some of the

⁴⁹⁸ According to an author interview with a former senior OSD official on March 29, 2012.

⁴⁹⁹ Mark D. Mandeles, *The Future of War: Organizations as Weapons* (Dulles, VA: Potomac Books, 2005), 78.

⁵⁰⁰ According to author interviews with former OFT staff and close observers conducted from January 2012 – February 2013.

resistance that existed and also to accelerate the development of capabilities. Many in the office recognized these partnerships as key to the office's performance and they became so commonplace that they were referred to as "carpooling" (in pursuit of a common objective).⁵⁰¹ The importance of these bureaucratic alliances was recognized by others as well as the U.S. Government Accountability Office (GAO), which noted in 2006 that the relationship developed between OFT and the Naval Research Laboratory was important to early ORS accomplishments.⁵⁰² Surveys of military innovation over the past century have similarly shown that multiorganizational arrangements such as those pursued by OFT "fosters technological progress and innovations."⁵⁰³

Sufficient resources are required for change agents to be effective. Altering the way organizations operate or, in the case of DoD, developing advanced capabilities requires adequate resources. This was true in the three cases addressed in preceding chapters where OFT was able to advance its specific initiatives and had enough resources to do so. However, many believed that OFT as an organization was not provided enough funding to achieve its broader agenda of transforming the department.⁵⁰⁴ Some believed that the office could have either pursued a broader set of initiatives, some of their initiatives more aggressively, or both. In addition, a larger budget for OFT may have caused other elements of DoD to take OFT more seriously, because of the financial clout

⁵⁰¹ According to author interviews with former OFT staff on February 21, 2012 and February 28, 2012.

⁵⁰² GAO "Space Acquisitions."

⁵⁰³ Mandeles, *Military Transformation Past and Present*, 89.

⁵⁰⁴ According to author interviews with former OFT staff on February 15, 2012, February 28, 2012, and March 1, 2012.

it exercised. However, several of those close to formation of OFT indicated that Rumsfeld offered OFT's director additional resources, but that he did not want them believing that "malignancies arise from having too much money."⁵⁰⁵

Opposing bureaucratic inertia can stifle change agency efforts. Although already well established in the literature on organizational change, the experience of OFT again demonstrated that opposition encountered from the bureaucracy can slow change agendas. Bureaucratic inertia of the type encountered by OFT has been called the Achilles heel preventing transition to new ways of doing things.⁵⁰⁶ Resistance to OFT came from all directions: the Military Services, other elements of OSD, and selected members of Congress. Most of those interviewed noted that this inertia greatly limited OFT's ability to advance change and that the greatest opposition came from the Services. As a result of promoting the office's agenda, "anti-bodies" in the Services emerged, which were resistant to OFT initiatives and opposed change.⁵⁰⁷ Even in cases where the Services seemingly cooperated with OFT (as with the transformation roadmap process), they tended to simply recast what they were already doing as transformational rather than actually changing what they were doing.⁵⁰⁸

Given the preceding analysis of the key internal and external variables and the major findings that emerged, it is clear that several of the key bureaucratic prerequisites for OFT to fully achieve its goals were not present. First and foremost was the absence of

⁵⁰⁵ According to author interviews with former OFT staff February 28, 2012 and March 1, 2012.

⁵⁰⁶ Stulberg and Salamone, *Managing Defense Transformation*, 4-5.

⁵⁰⁷ According to an author interview with a former OFT assistant director on February 21, 2012.

⁵⁰⁸ According to an author interview with former OFT staff on March 1, 2012.

leadership on the topic of transformation by Rumsfeld. There are many reasons for this, but the result was that OFT was ill equipped to achieve its goals as fully as it could have. Another bureaucratic impediment was where OFT was established within the structure of DoD. As a direct report to the Secretary, it required either leadership from the Secretary or specified authorities to exercise any control over the components. OFT had neither and accomplished what it did merely on the perception (of others) of the importance of transformation and the ties the office had to Rumsfeld. Another missing ingredient was the lack of sufficient funding for OFT to pursue its agenda more broadly and/or more aggressively. A larger amount of funding would have also furthered the perception of others that transformation was important to Rumsfeld. Instead, the limited funding OFT did receive relegated it to being seen by many as a boutique “hobby-shop” pursuing niche initiatives. All of these factors (and others) permitted significant bureaucratic resistance to OFT across the department to amass, thus slowing any progress it had hoped to make.

C. Towards a Framework for Catalyzing Change

The variables, or dimensions of the organization, examined above and presented in Chapter Two were used to structure the data collection and analysis within and across cases. They provided depth to the research and addressed the secondary research questions, which the evaluative criteria alone could not. The dimensions were derived from various literature reviewed (see Chapter Three) and are common to several organizational theorists and practitioners alike.

In addition to structuring the data and facilitating comparison across cases, these dimensions form the basis for a framework that can be applied to evaluate change agents

and the environment within which they operate. By comparing and contrasting the internal and external variables, areas of either convergence or divergence between them are highlighted. Areas of similarity demonstrate alignment between a change agent and the external environment it is to influence. Differences between them reveal disconnects that may have to be addressed (directly or through offsetting measures) if the change agent is to succeed in its mission. Through comparison of these variables, policy makers (either in advance or in reflection) can gain insight into the appropriateness of an independent office to advance a change agenda and whether or not the bureaucratic prerequisites exist. Even though this framework as applied in this study proved valuable in addressing these questions, it should be further tested across other cases in other policy environments to determine its extendibility. Until then, the framework still remains useful as what Richard Neustadt and Ernest May referred to as a *small-N* method that can be “easily remembered and applied” by practitioners seeking to introduce rigor to their policy decisions.⁵⁰⁹

Table 7 applies this framework to OFT and DoD to underscore areas of alignment (and misalignment). The evaluation of each variable is based upon the assessment presented in the preceding section. Although one could apply more rigorous scales and measures, each variable is simply characterized as *high*, *moderate*, or *low* to illustrate the degree to which the variable is present in OFT, the change agent, and DoD, the external environment.

⁵⁰⁹ Richard E. Neustadt and Ernest R. May, *Thinking in Time: The Uses of History for Decision Makers* (New York: The Free Press, 1986), xvi.

Table 7: Framework for Evaluating Organizational Change Dimensions, OFT and DoD

Variable Organization	Office of Force Transformation (Change Agent)	Department of Defense (External Environment)
Leadership/Vision <ul style="list-style-type: none"> Degree of leadership involvement 	<i>High</i> Considerable involvement of director	<i>Low</i> Virtually no involvement of Secretary of Defense
Mission/Goals <ul style="list-style-type: none"> Degree of mission clarity Degree of alignment with higher goals 	<i>High</i> Clearly articulated goals; well-aligned with DoD and national goals	<i>Moderate</i> Prescribed DoD goals lacking requisite implementation details
Culture <ul style="list-style-type: none"> Amount of risk-taking 	<i>High</i> Organization imbued with sense of risk-taking/entrepreneurship	<i>Low</i> Very risk-averse, especially Military Services
Structure <ul style="list-style-type: none"> Influence (and position) relative to surrounding organizations 	<i>Low</i> Exercised little influence over other organizations; lacked authorities	<i>Moderate</i> OSD has authority but Military Services wield considerable clout/resistance
Personnel <ul style="list-style-type: none"> Staff knowledge of the issue/domain 	<i>High</i> Staff and leadership had background in innovative thought/concepts	<i>Low</i> Leadership lacked experience with or knowledge of military change
Resources <ul style="list-style-type: none"> Level of resources committed to the organization 	<i>Low</i> Provided limited budget for such a large mission	<i>High/Moderate</i> Began transformation with healthy budgets; wars increased pressure

As described, the framework illustrates areas of alignment between the change agent and its external environment. Using the assessment of the variables provided in the preceding section, the framework demonstrates a considerable disconnect between the Office of Force Transformation and the broader Department of Defense within which it was operating. While differences between the two across a few dimensions is not

irreconcilable and may be addressed through various strategies, the extent of disunion between them as conveyed in Table 7 further illustrates the point that the bureaucratic prerequisites did not exist for OFT to be as successful as many had hoped.

Applying such a framework to analyze a change agent and its external environment can address several important questions during policy and program development. The framework can be applied either in advance of establishing a new office or ex post facto when assessing the performance of such organization. If it is applied in advance of establishing an office it could help address whether the necessary bureaucratic prerequisites exist for the office to succeed. The framework can also help answer whether an independent office is the best organizational construct in the first place. Using the framework as a lens to examine the interaction between the change agent and external variables can also help to develop strategies for overcoming mismatches between the two. Indeed, the application of the framework in preceding sections provides the basis, in large part, for recommendations presented in the following section for ensuring the bureaucratic prerequisites required for successfully pursuing a change agenda exist.

D. Recommendations for Implementing Future Change Agendas

This research focuses on DoD's Office of Force Transformation to determine whether it was successful in advancing its leading initiatives. The selected cases demonstrate that OFT was successful in advancing its leading initiatives, however, further analysis of key dimensions of the internal and external environment reveal that conditions were not favorable towards OFT more fully accomplishing its broader set of

goals. The research shows that the department was better off with OFT, than without it. Perhaps more important though are the findings and insights from the office's experience that should inform future change agendas, which DoD or other parts of the Federal government may pursue. The body of literature conveyed here and the findings from this research offer a series of recommendations for DoD or other complex organizations seeking to implement a broad change agenda. Collectively, the following recommendations will provide the bureaucratic prerequisites required for successfully pursuing a change agenda while recognizing the multitude of external factors that impinge upon the efforts of a change agency, such as OFT:

First, an organization's *senior leadership needs to present a clear vision* for change and strategy for implementing it. This vision for change existed, in part, within DoD but not to the level of detail and specificity required for the rest of the department (and specifically, OFT) to implement it. This resulted in considerable uncertainty throughout DoD on what transformation was and Rumsfeld's vision for pursuing it. In their study of the Defense Advanced Research Projects Agency and prerequisites for success, Richard Van Atta and Michael Lippitz found that leadership vision was the most important factor in advancing a change agenda.⁵¹⁰ Stephen Rosen in his survey of modern military innovations also pointed to the importance of senior leader vision observing that thinking about the future security environment and ways of addressing it drove military

⁵¹⁰ Richard H. Van Atta and Michael J. Lippitz, *Transformation and Transition: DARPA's Role in Fostering an Emerging Revolution in Military Affairs, Volume I—Overall Assessment* (Alexandria, VA: Institute for Defense Analyses, April 2003), 60.

innovation.⁵¹¹ A clearer, more specific vision for change would have permitted OFT to be more closely aligned to departmental goals and also made it clear to the rest of the department why transformation was necessary and what was to be done to accomplish it.

Next, in addition to presenting a clear vision for change, *senior leadership must be engaged* in the change agenda or delegate such responsibilities and appropriate authorities. As evidenced throughout this study, neither Rumsfeld nor his deputy was engaged at a meaningful level on matters of military transformation. Little instruction was provided to OFT and virtually no time was afforded to it during its existence. Unfortunately, as Stulberg and Salamone's analysis revealed, such administrative "gaps" in oversight and engagement have been the crux of the problem limiting military change agendas in modern time.⁵¹² This is because organizational change is the result of both incentives and oversight by senior authorities and when neither is present, components are unlikely to change what they do. Senior leader active engagement in military change agendas improves the chance of success because, when bureaucratic resistance is encountered, leadership can identify areas for adjusting the strategy (to address objections) and concepts for implementing it.⁵¹³ OFT suffered from lack of senior leader engagement and wasn't granted sufficient authorities (through DoD directives) to exercise much control over the components it was established to transform.

⁵¹¹ Stephen Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), 253–254.

⁵¹² Stulberg and Salamone, *Managing Defense Transformation*, 188.

⁵¹³ Mandeles, *Military Transformation Past and Present*, 85.

A third recommendation for organizations pursuing large-scale change is that they should *establish independent offices*, with some autonomy, chartered with catalyzing change throughout the organization. Despite the limitations presented throughout this volume, OFT did succeed at advancing several of its leading initiatives and it did so because it was an independent office with the flexibility to operate somewhat unconstrained by formal processes (i.e., requirements and acquisition) that inhibit much of the department. Both OFT staff and observers interviewed believed that independent offices are the only way to advance a broad change agenda in DoD. They argued that these offices have a positive impact because they advance things quickly and that operating outside of the official policy stream provides the “maneuvering room” to promote change.⁵¹⁴ Not only has OFT’s experience demonstrated the utility of independent offices (over pursuing change agendas through existing organizations), but Terry Pierce and others studying modern military change have pointed to the efficacy of small innovation cells in promoting change through larger military organizations.⁵¹⁵

Regardless of what form the change agent takes, it needs to be provided *close proximity*, both physical and bureaucratic, *to senior leadership*. In the case of OFT, located outside of the Pentagon and out of sight of the Secretary, it suffered from too great of distance from leadership. Many of those involved with the establishment and management of the office believed that there needed to be a tighter connection between

⁵¹⁴ According to author interviews with former OFT staff on February 28, 2012 and March 15, 2012.

⁵¹⁵ Pierce, *Warfighting and Disruptive Technologies*, 30, 196. See also Van Atta and Lippitz, *Transformation and Transition*, 64. Stulberg and Salamone pointed to the “marginal effectiveness” of change agents established within existing organizations, as opposed to independent office such as OFT (see *Managing Defense Transformation*, 189).

OFT and DoD leadership to be effective and that being outside of the Pentagon hurt the office.⁵¹⁶ This is because when out-of-sight the office can be overlooked when it comes to major procedural activities or decisions. However, this is exactly what the office's director wanted when it was established to avoid the "tyranny of the inbox" and being involved with the day-to-day operations of the Pentagon.⁵¹⁷ In the end, this resulted in unhealthy bureaucratic distance between the department and its designated change agency.

Fifth, the change agent needs to *develop a balanced strategy* that immediately demonstrates utility of the agenda and also ensures the initiatives will have an enduring impact. Initially, an agenda must include both quick wins that offer immediate benefits to convert skeptics while at the same time advancing larger-scale initiatives that may take longer to develop but yield more significant changes in the end.⁵¹⁸ Furthermore, of the initiatives that are pursued, they need to be carefully presented as sustaining (not revolutionary) innovations that build upon current capabilities to diffuse anticipated opposition. Pierce refers to this as "disguising" disruptive innovations and is essential to the success of military change.⁵¹⁹ Lastly, a balanced strategy must involve clear plans for ensuring the initiative transitions into the larger force and is institutionalized. Van Atta

⁵¹⁶ According to author interviews with former OFT staff on February 21, 2012, March 1, 2012, and March 8, 2012.

⁵¹⁷ According to an author interview with a former senior OFT official March 15, 2012.

⁵¹⁸ According to an author interview with a former OFT assistant director on March 8, 2012. A similar argument was also made by Stulberg and Salamone, *Managing Defense Transformation*, 188.

⁵¹⁹ Pierce, *Warfighting and Disruptive Technologies*, 196–197. This finding came from his survey of American military innovation over the past 100 years. Pierce notes that disguising the initiatives becomes less important when the level of inter-service rivalry (surrounding the capability) is high because it will result in a natural competition between the components.

and Lippitz observed that, if fielding an advanced capability is the goal of an initiative, then it is insufficient to develop examples or prototypes and expect Service processes to recognize its worth and implement it.⁵²⁰ This is because a central element of successful military innovations of the past is both generating and sustaining change by transitioning new capabilities into the force.⁵²¹

Another feature of a successful change agenda is *encouraging change within components*, not broad, headquarters-driven reforms. Indeed, OFT pursued both and had the most success in areas where it demonstrated utility to specific Military Services with the hope that they would further the initiative. Focusing on component-level, rather than department-wide, initiatives increases their chances of adoption given that changing a large, complex organization is difficult enough and takes considerable time and resources to accomplish. One former senior OSD official noted that changing DoD “is not like changing a large company, rather it is like changing an entire economy.”⁵²² Additionally, a survey of modern military innovation reveals they all existed at the component, not department level.⁵²³ Achieving this relies, in large part, on the development of a successful strategy (addressed above) that disguises innovations in such a way that Services will adopt and advance them on their own, without expenditure of significant time and resources by OSD to compel them to do so.

⁵²⁰ Van Atta and Lippitz, *Transformation and Transition*, 64.

⁵²¹ Stulberg and Salamone, *Managing Defense Transformation*, 33.

⁵²² According to an author interview with a former senior OSD official on March 29, 2012.

⁵²³ Mandeles, *The Future of War*, 175. Similar statements made by a senior OSD official interviewed on July 16, 2012.

Next, a successful change agenda involves *developing collaborative relationships* with key stakeholders through partnerships. This research shows that, where OFT succeeded, it had developed such partnerships. Conversely, where it struggled it had failed to do so.⁵²⁴ Such collaboration can be across the broader organization through “brokered agreements.”⁵²⁵ Stulberg and Salamone note that the success of a change agenda depends on the policy entrepreneurs’ interactions with different organizational layers and actors.⁵²⁶ Such partnerships can also exist external to the organization, as OFT demonstrated in its informal partnership with Congress in advancing ORS or its more explicit partnership with industry and academia to overcome opposition to all-composite hulls in the case of Stiletto. Such “outside forces can serve as enablers of internal transformation.”⁵²⁷

A final recommendation for catalyzing change throughout a larger organization is that the *change agency be given a formal role* in the major resource allocation processes in the department. The most logical role would be to give the agency either a joint or lead role in developing guidance to the components. Although OFT’s director eschewed participation in DoD processes, most of those interviewed agreed that lack of such a role

⁵²⁴ According to author interviews with former OFT staff on March 8, 2012 and April 12, 2012. These observers and staff noted that OFT struggled in developing “champions” of their activities among senior leadership and also failed to develop better alliances with key stakeholders such as Joint Staff (J7) and U.S. Joint Forces Command.

⁵²⁵ Van Atta and Lippitz, *Transformation and Transition*, 65–67.

⁵²⁶ Stulberg and Salamone, *Managing Defense Transformation*, 184.

⁵²⁷ *Ibid.*, 195.

was a major factor limiting the office’s performance.⁵²⁸ While it is true, as Cebrowski feared, a formal role in the resource allocation process would take time and resources from the independent office, the benefits would outweigh the costs. Without a formal role, change agents lack the ability to influence the process and incentivize component participation (unless they are given sufficient resources to incentivize participation). Responsibility over a strategic guidance document or a stage of the resource allocation process provide change agents with a *lever* to compel the type of changes they are trying to advance, which they cannot achieve otherwise. In addition, such a formal role can overcome most deficiency of senior leadership engagement, if it exists.

E. Study Limitations and Areas for Further Research

No research is without limitations—scope, methodological, etc.—and this dissertation is no different. There are noted limitations to the study but also ways of addressing them through further research. One limitation is that the investigation focuses exclusively on DoD while attempting to present findings and recommendations generalizable to the rest of the Federal government. One attempt to address this was by basing many of the findings on a literature that is more general to organizations, and not only the Department of Defense. Another limitation is that the study focuses intentionally on only a single DoD change agent—OFT—and does not examine in detail any other similar cases where DoD has attempted reform using an independent office (although it could be argued no such analog exists).

⁵²⁸ According to author interviews with former OFT staff and close observers conducted from January 2012 – February 2013. Those interviewed stated that OFT “couldn’t do what it needed to do” and that it was seen as “toothless” because it lacked a formal role in the process.

Potential future research could address these limitations and also extend the findings presented in this volume. One area for further research is comparing the OFT case with a similar case (contemporary or historic) elsewhere in the Federal government. There are examples of independent change agents established in other agencies and a rigorous comparison could test how generalizable the findings conveyed here are to the Interagency. Another potential area of further research is to compare the OFT case with another change agenda pursued by DoD in the past. For example, it could be compared to the introduction of PPBS, or the Business Transformation Agency more recently, or other change agendas over the decades—none are identical, but sufficiently similar cases should exist. A final area for further research to note is the logical extension of the evaluative criteria used here to either other parts of OFT or perhaps other parts of DoD (or Federal government) to determine its utility as a framework for assessing performance of change agendas and generating prescriptive policy recommendations.

APPENDIX: EXPERT INTERVIEWS

I conducted 20 interviews in support of the case studies detailed throughout this dissertation. Interviews were performed over the period of January 2013 – February 2013. Most of these interviews were conducted in person, the remainder by telephone. They were semi-structured interviews with a script that was used to help ensure that all respondents addressed general topics. Additional questions were asked of those who had expertise in specific areas. The length of the interviews ranged from 45 to 90 minutes but they were typically one hour long.

The primary criterion for selection as a respondent was that they have direct knowledge of the events under investigation. In addition, an effort was made to get a mixed group of respondents both inside and outside of the Office of Force Transformation with generally balanced views of the office—both positive and negative. Candidates were identified through author familiarity with key actors and also upon recommendations from those already interviewed. Initial contact was made via email, and all respondents agreed to terms of the Informed Consent Form approved by the Institutional Review Board. Due to human subjects research guidelines at the outset of this research, interviews were conducted on a not-for-attribution basis. Therefore, only the names of those interviewed are listed below and nothing ties the names to the dates

interviewed that are cited throughout this volume. The names and dates of interviews are on file with the author.

The following lists the twenty experts interviewed for this research. For each, their name is provided along with the organization they were with and the position they held during timeframe this research targets—2002-2006, OFT’s years of operation. The interview format is also listed given that all interviews were not in-person.

Name	Organization	Position	Interview Format
Mr. Jim Kurtz	Institute for Defense Analyses	Assistant Division Director	In person
Dr. Mark Mandeles	Office of the Secretary of Defense (Office of Force Transformation)	Onsite Contractor	In person
Ms. Paula Trimble	Office of the Secretary of Defense (Rapid Reaction Technology Office)	Onsite Contractor	In person
Dr. John Hanley	Office of the Secretary of Defense (Office of Force Transformation)	Assistant Director	In person
Mr. Walt Fairbanks	Office of the Secretary of Defense (Office of Force Transformation)	Budget Analyst/ Comptroller	In person
Mr. Rob Holzer	Office of the Secretary of Defense (Office of Force Transformation)	Outreach Specialist / Onsite Contractor	In person
Col Ric Witt (ret)	Office of the Secretary of Defense (Office of Force Transformation)	Program Manager/ Air Force Officer	Via telephone
Dr. Tom Hone	Office of the Secretary of Defense (Office of Force Transformation)	Assistant Director	In person
Mr. Terry Pudas	Office of the Secretary of Defense (Office of Force Transformation)	Deputy Director	In person

Name	Organization	Position	Interview Format
Dr. Chris Lamb	Office of the Secretary of Defense (Policy)	Deputy Assistant Secretary of Defense (Resources and Plans)	In person
Mr. John Garstka	Office of the Secretary of Defense (Office of Force Transformation)	Assistant Director	In person
Dr. Andy Krepinevich	Center for Strategic and Budgetary Assessments	President	In person
Cdr Greg Glaros (ret)	Office of the Secretary of Defense (Office of Force Transformation)	Program Manager / Navy Officer	In person
Mr. Ken Krieg	Office of the Secretary of Defense (Acquisition, Technology, and Logistics)	Under Secretary	In person
Dr. James Blaker	Science Applied International Corporation	Contractor	In person
COL Eric Van Camp (ret)	Office of the Secretary of Defense (Office of Force Transformation)	Program Manager / Marine Corps Officer	In person
Mr. Andrew Marshall	Office of the Secretary of Defense (Office of Net Assessment)	Director	In person
Mr. John Garstka ⁵²⁹	Office of the Secretary of Defense (Office of Force Transformation)	Program Manager/ Education for Transformation	In person
Dr. Ralph Doughty	U.S. Army Command and General Staff College	Transformation Chair	Via telephone
Dr. Lin Wells	National Defense University	Transformation Chair	Via telephone

⁵²⁹ Garstka is listed twice given that he was interviewed a second time, in his role in a different capacity and thus treated as a second respondent.

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