

**TWENTY-FIRST CENTURY MILITARY SUPERIORITY
A STRATEGIC BUSINESS APPROACH**

**A thesis presented to the faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree**

MASTER OF MILITARY ART AND SCIENCE

by

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This study applies ideas in business strategy to the formulation of national military strategy for the twenty-first century. The study starts with the premise that United States defense planning is at a crossroads and follows with the notion of the need for a reinvigorated focus on strategy.

The study explains that strategy is relating and aligning an organization to its environment and that the goal of strategy is to find an optimum position from which to defend or attack. The study uses the similarity of firms in competition in the marketplace and of states in competition in the security arena as a basis to suggest a business oriented approach to address and formulate military strategy.

The study concludes that U.S. national security planning could profit greatly from an approach that distinguishes among core, environmental, and hedging strategies. The study leverages business concepts such as defining the business, dealing with new competitors, entry and exit barriers, asymmetrical or indirect attack, and strategic renewal. Finally, using these concepts, the study promotes a recommended strategy and action plan for the future.

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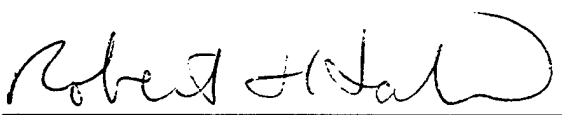
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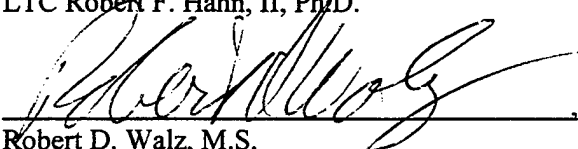
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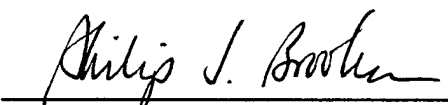
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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other government agency.

ABSTRACT

TWENTY-FIRST CENTURY MILITARY SUPERIORITY: A STRATEGIC BUSINESS APPROACH by MAJ Peter A. Altavilla, USA, 109 pages.

This study applies ideas in business strategy to the formulation of national military strategy for the twenty-first century. The study starts with the premise that United States defense planning is at a crossroads and follows with the notion of the need for a reinvigorated focus on strategy.

The study explains that strategy is relating and aligning an organization to its environment and that the goal of strategy is to find an optimum position from which to defend or attack. The study uses the similarity of firms in competition in the marketplace and of states in competition in the security arena as a basis to suggest a business oriented approach to address and formulate military strategy.

The study concludes that U.S. national security planning could profit greatly from an approach that distinguishes among core, environmental, and hedging strategies. The study leverages business concepts such as defining the business, dealing with new competitors, entry and exit barriers, asymmetrical or indirect attack, and strategic renewal. Finally, using these concepts, the study promotes a recommended strategy and action plan for the future.

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I reserve my special thanks for my wife Barbara for her ongoing special love, encouragement, sense of humor, patience, and support to me in all my endeavors. Lastly, I want to recognize my son Anthony who helps me daily to rediscover the joy in all things, provides me the indescribable happiness of being a father, and helps me to see what is truly important in life. I dedicate this work to him because he will, one day, have to carry the shining torch to light the path for what may very well be a sometimes dark and dangerous world.

PREFACE

Major Altavilla has over twelve years of experience in the U.S. Army. He is branched Field Artillery and has served in both howitzer and rocket artillery units in the U.S. and in Germany. Major Altavilla is a member of the U.S. Army Acquisition Corps (AAC). He has been a contracting officer and weapon system acquisition manager for the U. S. Army Missile Command where he led a team that awarded and managed contracts to develop, field, and support the MLRS weapon system for U.S. and allied forces.

Major Altavilla has worked closely with industry and has had extensive interaction with Loral Corporation, Martin Marietta Aerospace, DynCorp, McDonnell Douglas Aerospace, and a US/UK/GE/FR multi-national joint venture firm. While at DynCorp on an industry fellowship program, Major Altavilla served as a market analyst, contract administrator, proposal developer, financial analyst, and production process engineer within DynCorp's Government Services Group.

Major Altavilla studied engineering and business at Drexel University in Philadelphia, PA. While at Drexel, he spent two years working on the F/A-18A Hornet aircraft weapon system with the U.S. Navy and McDonnell Douglas Aerospace. Major Altavilla attended the University of Texas (UT) Graduate School of Business in Austin, TX and graduated with an M.B.A. in June 1996. During the course of his studies at UT, he studied business strategy and related subjects. He also attended an international business symposium in London, U.K. that focused on risk

management and strategy development to capitalize on business opportunities in the Commonwealth of Independent States (CIS).

Major Altavilla is currently attending the Command and General Staff College (CGSC) at Ft. Leavenworth, KS and is a candidate in the Master of Military Art and Science (MMAS) Program there. Major Altavilla conducted this study as part of the requirements for the MMAS program. Major Altavilla will graduate from CGSC in June 1997.

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CHAPTER ONE

INTRODUCTION

Background

Military forces have traditionally had two principal purposes: one is to deter war, and the other is to fight it successfully if deterrence fails. Obviously, the structure, capability, and strategy of military forces to either win or deter war is linked to missions in support of national interests and is driven by geopolitical, technological, economical, and societal forces in the environment. In war, the ability of a general to judge correctly the uniqueness of each situation and to come up with the most appropriate strategy, given his own and his opponent's relative strengths and weaknesses and the battle conditions, is the principal determinant of success. In essence, military strategy is the quest for competitive advantages, real or psychological, over the opponent before and during hostilities.¹ Liddel Hart said, "the true aim of strategy is not to do battle but rather to achieve a situation so advantageous which, if it does not of itself bring the enemy to surrender, would produce a sure victory in the field."² The challenge of determining and implementing optimum strategic military policy is difficult. The task is especially demanding when the determination of strategy must consider environmental forces that encompass geopolitical upheaval, diffuse threats, rapid technological change, globalization, weapons proliferation, limited resources, competing needs, legal constraints, and diverse missions.

Correspondingly, in the business sector, firms have responded well to similar challenges. They have closed the gap in most industries and have seized the lead in many. This is an impressive performance given the state of affairs just ten to fifteen years ago. How are U.S. firms achieving their success? They have differentiated themselves, developed and leveraged core competencies, achieved economies, and have employed other strategies to gain a competitive advantage. In essence, U.S. firms develop and execute superior strategy to win.

Significance of the Thesis

The essence of formulating business strategy is relating and aligning an organization to the forces influencing its environment. The goal of business strategy is to find a position where the organization can best defend itself against these forces or influence them in its favor. The environmental forces that affect the U.S. military are characterized by geopolitical upheaval, diffuse threats, rapid technological change, globalization, weapons proliferation, limited resources, competing needs, and new missions. The environmental forces that affect U.S. firms are characterized by intense business competition, new technology, product proliferation, emergence of new markets, changing customer preferences, and social and business related litigation and regulation. The forces that affect these organizations, although manifested differently, are the same.

Since these environmental forces are the same and because of general parallels in the organizational dynamics of large organizations, I believe there are strong similarities in the behavior of firms in competition in the global marketplace and of states in competition in the global security arena. This similarity may suggest a new business oriented approach to address or formulate strategy for the U.S. military.

Research Question

Given this context, the primary question that the thesis addresses is: "What is the viability of using ideas in business strategy as a framework to analyze evolving issues in U.S. national military strategy?" The subordinate questions to the basic research question are: (1) What are some of the models used to formulate national military strategy and business strategy?, (2) What are the characteristics of these models?, (3) What are the strengths and weaknesses of these models?, (4) How might we address national military strategy using ideas and models in business strategy?, and (5) What does the application of this framework suggest for the future?

Definitions and Terms

The thesis uses business strategy as an analytical framework to address national military strategy. Using these ideas, the thesis attempts to determine a strategic direction to ensure U.S. military superiority in the twenty-first century. The thesis emphasizes competitive and non-competitive strategies; a capabilities based approach; core, shaping and hedging strategies; the strategic concept of organizational renewal; an overall general management perspective; and the economic and non economic tradeoffs that must be made to achieve success.

These terms, ideas mentioned earlier, and others that have not yet been discussed are part of the lexicon of business strategy and need elaboration. The principal sources for the following discussion of definitions and terms are Michael E. Porter's book Competitive Strategy and Gary Hamel and C. K. Prahalad's book Competing for the Future.

Barriers. Structures that prevent or hinder new entrants from entering the market and becoming competitors or from allowing existing competitors to exit the market. Barriers take the form of scale economies, scope economies, experience economies, and other forms.

Business Strategy. A broad formula for how a business or organization is going to compete, what its goals should be, and what policies will be needed to carry out those goals. It is a combination of (1) the ends for which the firm is striving, (2) the ways by which it is seeking to get there, and (3) the means to fuel the journey. The essence of formulating business strategy is relating and aligning an organization to the competitive forces influencing its environment. The goal of business strategy is to gain a competitive advantage by finding a position where the organization can best defend itself against these forces or influence them in its favor.

Competitive Advantage. Competitive advantage is any element or factor that offers the holder a favorable position when dealing with existing or potential competitors. Competitive advantages that are inherently sustainable, those advantages anchored in industry economics, command attention and are the most powerful.

Competitive Forces. There are five competitive forces. They are entry, threat of substitution, bargaining power of suppliers, bargaining power of buyers, and rivalry among current competitors. These forces show that competition in an industry goes well beyond the established players. Competition in this broader sense might be termed extended rivalry. Different forces take on prominence in shaping competition in each industry. The underlying structure of an industry, as reflected in the strength of the forces, should be distinguished from short-run factors that can affect competition in a transient way.

Core Competencies. Core competencies are a set of market recognized skills and abilities that are unique to an organization that give it a competitive advantage in the marketplace.

Differentiation. Differentiation is a generic competitive strategy. The strategy involves differentiating the product or service offering of the firm, creating something that is perceived industrywide as being unique. Differentiation can take many forms: (1) design, (2) brand image,

(3) technology, (4) features, (5) customer service, (6) dealer network, and (7) other dimensions.

Differentiation does not allow the firm to ignore costs, but cost minimization is not the strategic target. Differentiation is a viable strategy because it provides insulation against competitive rivalry because of brand loyalty by customers and lower sensitivity to price. It also increases margins which avoids the need for a low cost position. Differentiation often requires a perception of exclusivity. More commonly, achieving differentiation implies a tradeoff with low cost because the activities associated with achieving differentiation are inherently costly.

Economies of Scale. Economies of scale refer to declines in unit costs of a product, operation, or function as the absolute volume per period increases. Scale economies can be present in nearly every function of a business including manufacturing, purchasing, research and development, marketing, service network, sales force utilization, and distribution. Economies of scale deter entry by forcing the entrant to come in at large scale and risk strong reaction from existing firms or come in at small scale and accept a cost disadvantage, both undesirable operations.

Economies of Scope. Scope economies are derived from activities in interrelated markets. If strong, a competitive advantage in one market can be used to build a competitive advantage in another market. The term defines the conditions for which synergy works. To achieve economies of scope, a company must be able to share resources across markets, while making sure the cost of those resources remains largely fixed.

Experience Effects. Experience effects are based on size overtime, rather than size at a particular point in time. Experience effects manifest themselves as an inverse relationship between cumulative production and average cost, operating reliability, success rate of product introductions, and the marketability of high-technology products.

Focus. Focus is a generic competitive strategy. A focus strategy targets a particular buyer group, segment of the product line, geographic market, or other narrowly defined element. Low cost and differentiation strategies are aimed at achieving their objectives industrywide. A focus strategy seeks to serve a particular target very well. The strategy rests on the premise that the firm is thus able to serve its narrow strategic target more effectively and efficiently than competitors that are competing more broadly. A focus strategy can seek to meet the needs of a particular target using low cost, differentiation, or both.

Fragmentation. Fragmentation accompanies ambiguity and leads to a loss of direction and purpose.

Game Theory. Game theory is the study of strategic interaction. Game theory describes the structure of various kinds of games that identify what choices self-interested, strategically interacting players will make under a variety of circumstances and the outcomes of those choices.

Generic Competitive Strategies. In coping with the five competitive forces, there are three potentially successful generic strategic approaches to outperforming other firms in an industry. They are overall cost leadership, differentiation, and focus.

General Management Perspective. A general manager's perspective is intermediary in nature. There is a simultaneous importance of both vision and detail. The problems that he faces lack structure. However, he must take near-term action on these problems, and his actions will have a pervasive impact on the organization.

Hedging. Hedging grows in importance as the clarity of interests decreases and the ambiguity about the environment and the probability of surprise increases.

Overall Cost Leadership. Cost leadership is a generic competitive strategy. Cost leadership requires aggressive construction of efficient-scale facilities, vigorous pursuit of cost

reductions from experience, tight cost and overhead control, avoidance of marginal customer accounts, and cost minimization in areas like research and development (R&D), service, sales force, advertising, and so on. A low-cost position protects the firm against all five competitive forces because bargaining can only continue to erode profits until those of the next most efficient competitor are eliminated and because the less efficient competitors will suffer first in the face of competitive pressures.

Strategic Management. Strategic management involves laying the foundation for tomorrow's success while competing to win in today's marketplace. Winning today is not enough. Unless the seeds of tomorrow's success are planted and cultivated, the organization will not have a future. Strategic management addresses the conflicting demands by stakeholders, actions by competitors, and other factors. Strategic management involves application of organizational management and business strategy.

Strategic Renewal. Strategic renewal involves those actions that ensure continuation of the benefit stream from the organization's activities in light of changes in competition, technology, industry structure, new political realities, resource scarcity, and managerial interest. Strategic renewal focuses on developing capabilities that offer a competitive advantage. Renewal comes from expanding and enhancing capabilities in existing product markets, bringing in new capabilities, extending existing capabilities to new product market domains, and entering new businesses altogether. Some forces, mechanisms, and opportunities for renewal are internal development, acquisitions, joint ventures, license agreements, and partnerships.

Uncertainty. Uncertainty results from inadequate knowledge and the volatility of the international environment. Uncertainty is recognized as an accepted part of the environment that cannot be removed with more precise planning.

Assumptions

Assumptions are enablers that serve as a basis for and as vehicles to facilitate the research study. As a basis to undertake the research, the following underlying propositions or statements are assumed to be true:

1. The forces that affect development of national military strategy are the same or similar to those that affect firms in the global business arena.
2. These forces can be measured either qualitatively or quantitatively.
3. These forces can be appropriately modeled.
4. Both business and military organizations can develop strategies that compensate for or leverage the effects of these forces to gain competitive advantage.

Limitations

Limitations are constraints that force the researcher to narrow the scope of study. The principal limitations that exist are time and other constraints imposed by the nature of the Masters of Military Arts and Sciences (MMAS) Program and the Command and General Staff Officer's Course (CGSOC) at Fort Leavenworth, Kansas. In addition to these constraints, there is a gap in the availability of information that specifically correlates business strategy with national military strategy.

However, this gap in available information is considered an opportunity. This study may provide a significant and unique contribution to the literature of military studies by merging two broad areas of study: (1) strategic business management and (2) military strategy.

Delimitations

This thesis is delimited in order to stay within the scope of the MMAS Program and will generally follow the research model suggested. The study will focus on the application of ideas

in business strategy and concepts in strategic management from the early 1980s through the present. The scope of the analysis that focuses on business strategy models and their application to national security matters will be limited principally to Michael E. Porter's Competitive Five Forces Model.

As part of the competitor analysis portion in the application of that model to national security issues, the focus will be limited to a profile of our most likely projected threats through the year 2010. The U.S. military's current planning assumption is that it will not face a major competitor until after the year 2010.

Key Problems and Likely Solutions

Current and anticipated future circumstances require that U.S. national military strategy should be broadly differentiated in that it should provide the ability to deter and defeat any threat along the entire spectrum of conflict while also being focused to defeat the specific type of enemy that it is most likely to face with only minimal risk. Moreover, resource constraints dictate that it achieve these ends at low relative cost. A key problem is that generic competitive business strategy suggests these differing strategies may not be mutually supportable or achievable.

Likely solutions are that the existing combat forces mix and supporting business practices should be altered in ways so as to generate the resources that will fuel strategic renewal. These "freed-up" resources should then be made available to develop a new set of skills, capabilities, and competencies that will give the ability to respond to a threat that acts and has capabilities that are asymmetrical to our own. Strategic partnering and cooperative efforts to develop close political, economic, and military ties with non traditional nations may also be key elements of the strategic solution.

Methodology

The research design is structured into general categories that address sequentially my primary and secondary research questions. In general, the thesis answers the primary and secondary research questions through collection, analysis, and interpretation of research, use of case studies, quantitative methods, and application of logical argument. The use of quantitative methods is supportive only and is not the fundamental basis for the conclusions of the study. However, the study does use quantitative methods to develop an analogy between business and the military on the importance of research, development, and modernization to an organization's effectiveness in the marketplace. The analysis is performed using multiple regression techniques of actual empirical business data. After development of a satisfactory regression model, military data is then substituted to draw an appropriate analogy.

In general, to address the primary and secondary research questions, the study adheres to the following methodology. First, the thesis provides appropriate background, states the significance of the thesis, and introduces the primary and secondary thesis questions. Second, the study develops an understanding of concepts in military strategy and strategic business management through descriptions, arguments, case studies, analogies, and other methods to directly address the primary thesis question. Third, the study applies and combines a selected strategic business model, in conjunction with other concepts in business strategy, with an assessment of current and future security challenges to analyze and assess evolving U.S. national military strategy. Fourth, based on these insights, the study develops recommendations for a potentially new strategic military paradigm. Finally, the study offers conclusions and discusses opportunities for further study.

Proving the Thesis

The thesis is proved in the following way. First, the study presents evidence that shows there are more symmetries than asymmetries in the elements of business and military strategy. This evidence shows that an alternative approach to address national military strategy using concepts, tools, and ideas from business strategy is viable. The thesis addresses the secondary thesis questions by determining the appropriateness of U.S. national military strategy by applying tests of consistency.³ Tests of consistency analyze and determine if an organization's strategy possesses internal alignment and synergy, resource fit, and external environmental fit with industry, competitor, and society trends. Based on the proven viability of concepts in business strategy and the results of the tests of consistency, the thesis then advances a set of recommendations to revise national military strategy for the twenty-first century.

¹Spyros G. Makridakis, Forecasting, Planning, and Strategy for the 21st Century (New York: The Free Press, 1990), 146.

²Makridakis, 146.

³Michael E. Porter, Competitive Strategy (New York: The Free Press, 1980), xix.

CHAPTER TWO

MILITARY AND BUSINESS STRATEGY

General

In order to ascertain the viability of using ideas and concepts in business strategy as a tool to analyze and formulate national military strategy, it is first necessary to develop an understanding of key concepts in both military strategy and strategic business management. It is also helpful to analyze and compare relevant ideas, concepts, and models used in both business and security arenas.

To accomplish these objectives, this section: (1) discusses current national military strategic frameworks and identifies possible weaknesses in the context of a dramatically altered military strategic environment; (2) comments on fundamental strategic business concepts such as the role of strategy and strategic planning in organizational design, managing strategic change, core, environmental, and hedging strategies, defining the business, dealing with new competitors, entry and exit barriers, asymmetrical or indirect attack, and strategic renewal, and (3) relates these business concepts and ideas to military strategy and security planning.

The discussion shows that not only are there more symmetries than asymmetries in the elements of business and military strategy, but some of these ideas have already been shared. This observation indicates that an alternative approach to address national military strategy using concepts, tools, and ideas from business strategy is, in fact, viable. Further, the discussion provides insights on new ways to leverage these ideas.

Military Strategy

Purpose and Framework

The United States approaches its global commitments with a strategy founded on deterrence and buttressed by the capability to project power to safeguard its national interests.¹ Successful military operations encompass the national and military objectives (ends); national policies and military concepts (ways); and national resources, military forces, and supplies (means). Military operations alone may not achieve the desired strategic end state. Military activities across the full range of operations must be synchronized with other instruments of national power and focused on common national aims. National military strategy is derived from the national security strategy. National military strategy attempts to promote peace, deter aggression, and, failing that, fight and win. But in the larger context, defeating an enemy military force is rarely sufficient, in and of itself, to ensure a long-term solution to a crisis. The national military strategy and defense policy provide strategic guidance for the employment of military forces. The National Military Strategy (NMS) provides advice of the Chairman, in consultation with the other members of the Joint Chiefs of Staff and the combatant commanders, to the President, the National Security Council, and the Secretary of Defense as to the recommended NMS and fiscally constrained force structure required to attain the national security objectives.

The development of national military strategy is driven by the Chairman, Joint Chiefs of Staff (CJCS), the Joint Chiefs of Staff, (JCS), and the Commanders in Chief (CINCs) using the Joint Strategic Planning System (JSPS), the Joint Operation Planning and Execution System (JOPES), and the Planning, Programming, and Budgeting System (PPBS).² The roles of the CJCS, JCS, and CINCs are to influence national security policy through the Office of the Secretary of Defense (OSD) and joint strategic planning. In general, the CJCS, JCS, and CINCs

examine U.S. military posture against the strategic environment, national security objectives, and resource constraints. They consider options to modify or change the military strategy to counter risks to U.S. global interests. They identify the force levels required to accomplish the strategy and establish a framework to identify priorities and risks to provide the CINCs with the best mix of forces, equipment, and support attainable within defined fiscal constraints.

The CJCS, JCS, and CINCs use the JSPS to provide their strategic planning input into the planning phase of PPBS.³ The JSPS is an interactive system that provides military advice to both the PPBS and to the JOPES. They use the planning phase of PPBS to develop guidance for DoD components to complete their internal planning and programming effort to achieve their mid and long-range objectives. The JOPES is a joint-level process that translates near-term national military strategic objectives into mission taskings which requires the CINCs to complete operational plans within the available resource level. As such, the roles of the CJCS, JCS, and CINCs are to use JSPS to influence national military strategy and policy in the near term through JOPES and in the long term through the JSPS and the planning phase of PPBS. The Joint Strategic Capabilities Plan (JSCP) provides guidance for planning purposes to the combatant commanders and the Chiefs of the Services to accomplish tasks and missions based on current military capabilities. This guidance capitalizes on US strengths and permits it to exploit the weaknesses of those who may threaten our national interests.⁴ The JSCP provides a coherent framework for capabilities-based military advice provided to the NCA.

In war and operations other than war, combatant commanders are the vital link in the chain of command established by the NCA (the President and Secretary of Defense, or their duly deputized alternates or successors). Directives flow from the NCA through the Chairman of the Joint Chiefs of Staff to the combatant commanders, who plan and conduct the operations that achieve national and alliance and/or coalition strategic objectives. As stated, national security

strategy and national military strategy, shaped by and oriented on national security policies. provide strategic direction for combatant commanders. Combatant commanders, in turn, provide guidance and direction through their combatant command strategies and plans for the employment of military forces, in conjunction with interagency and multinational forces, in the conduct of military operations. These strategies integrate national and military objectives (ends), national policies and military concepts (ways), and national resources and military forces and supplies (means).

The following systems model, shown below in Figure 1, depicts the formulation and execution of national military strategy.⁵

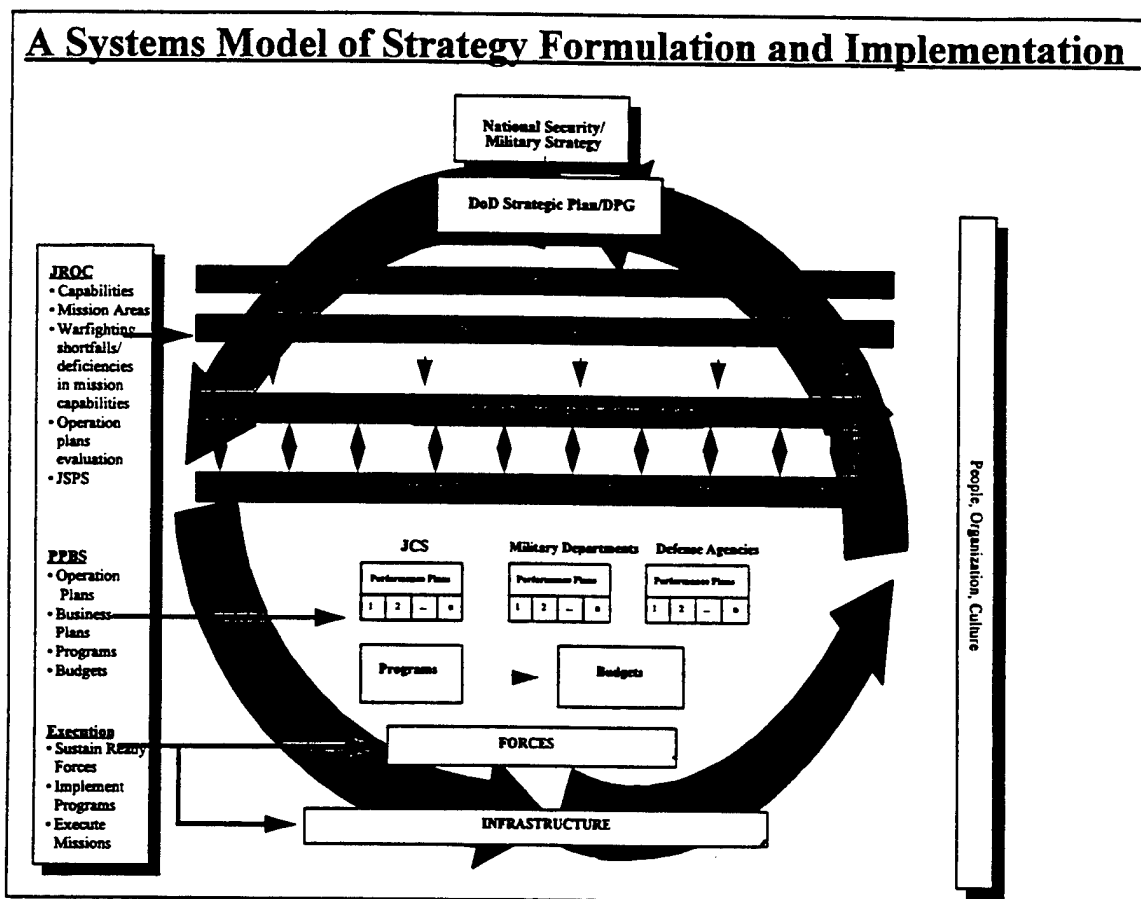


Fig. 1. Systems Model of the Formulation and Execution of National Military Strategy.

Rethinking U.S. Military Strategic Paradigms

The global environment affecting U.S. military strategy is changing rapidly. The U.S. needs to develop methods that consider these new conditions. Unfortunately, current methods used in the development of military strategy are not necessarily well suited to address long-term issues. Furthermore, their relevance to a changing security environment is questionable. They tend to ignore or at least de-emphasize what American corporations have long emphasized, hedging. Moreover, they focus disproportionately on the development of strategy as planning, programming, and resource allocation, rather than as ways to respond to, shape, preempt, and hedge against new emerging environments.⁶ The essential problem in organizations today is a failure to distinguish planning from strategizing. Rather, strategy should be viewed as revolution and everything else should be considered tactics.⁷

In contrast, as discussed, corporate strategy development and strategic planning focus on the long-term, hedging possibilities, and ways to shape the broader environment. Corporate strategists focus on the changing nature of the environment and look at the following critical areas:

1. Uncertainty - Uncertainty results from inadequate knowledge and the volatility of the international environment. Uncertainty is recognized as an accepted part of the environment that cannot be removed with more precise planning.
2. Hedging - Hedging grows in importance as the clarity of interests decreases and the ambiguity about the environment and the probability of surprise increases.
3. Fragmentation - Fragmentation accompanies ambiguity and leads to a loss of direction and purpose.⁸

There is a tendency in U.S. defense planning to employ what is essentially a simplified strategic model of fixed interests and a relatively fixed single environment for its strategic

planning. Little consideration is given to hedging or to shaping the broader environment in desirable ways.⁹ Military environments are considered fixed, so that strategy changes only when an environmental change becomes so apparent that there is little alternative to adapting to the new situation. The United States, a status quo power, has an imperative to consider important environmental change because we are one of the nations with the power to prevent or encourage it.

It is standard approach in military planning to project a set of threats and to design a military force that can cope with these threats. This works well in short-term planning where interests and environments are not likely to change much. When interests and environments change, this process breaks down. An attempt to predict exactly what future military threats will be in ten years will not work because: (1) U.S. interests are so diverse; (2) in many situations decisions are often made by idiosyncratic groups and individuals that are intrinsically unpredictable; and (3) our general ability to make long-term precise predictions is poor.¹⁰

Faced with this type of problem, organizations, the U.S. military in this case, can respond by either: (1) focusing on the short-term using a simple strategic model that considers a set of interests and a known and relatively fixed single environment; or (2) by designing forces and strategies for the long term against possible multiple environments rather than particular threats.¹¹ The first approach is not valid because of the long lead time it takes to field and deploy new systems, alter and institute new doctrine, change force structure, etc. By the time they are fielded, new systems, processes, and procedures may be wholly inappropriate for the environment that exists. The second approach is workable because it does not rely on a point prediction.

As an example, a major oil company will not develop detailed drilling plans for the year 2010 because short-term market demand projections lose all validity when extrapolated out over

a decade. Instead, the firm will strengthen its financial position to match the broad capital requirements needed to operate in a year-2010 energy environment. It may also choose to hedge if the firm projects an overly competitive energy market by diversifying into nonenergy businesses.¹²

In national security, a similar analogy can be made. In the short run, the U.S. faces the potential for a relatively small number of important military contingencies. As discussed, the military performs the necessary contingency mission planning accordingly. But, in the long-run, the U.S. faces many combinations of possible contingencies whose likelihoods are unknown, but whose consequences if they occur are significant. Clearly, it makes little sense to spend resources on any one of these because confidence in predicting which ones will occur is low. Instead of picking a specific set of threats and designing forces to meet them, it is more effective to: (1) proactively shape the environment to create a future that serves the nation's interests; and (2) choose a level of threat that requires a constant state of readiness with an appropriate deployment and mobility posture to match. This is the basis for the much debated two major regional contingency (MRC) strategy. For larger or simultaneous combinations of threats, the military devises a national mobilization strategy, an appropriate mix of nuclear forces, rapidly deployable leap-ahead technologies, and other hedges to cope.¹³

As stated, military forces can shape the environment that actually emerges.¹⁴ The tendency in defense strategy is to view military forces as mostly relevant to major conflicts. However, military forces can in fact help shape a security environment in many ways. The British Navy in the 19th century led to an international spread of commerce and a rule of law. The post-World War II environmental strategic role of U.S. forces contained Soviet adventurism while fostering the economic growth of Western Europe, East Asia, and Latin America. As discussed, since some business firms have developed an approach that offers at least one

imperfect way to cope with an environment of change and uncertainty, an alternative approach that uses these ideas to address and develop national military strategy makes sense.

Business Strategy

Background

Strategy became popular in American business circles in the 1970s and 1980s as American firms were forced to confront a changing business environment encompassing foreign competition, government regulation, and a turbulent financial environment. Today it is rare for a large company not to have some type of group dedicated to strategy and strategic planning. Virtually all large banks, insurance companies, oil companies, manufacturers, and mining companies face the problem of deciding where they are going in the long term. In general, firms develop strategy to address their environment in order to identify new opportunities and directions for growth. American business has adopted strategy and strategic planning because it offers at least one imperfect way to cope with a business environment of change and uncertainty.¹⁵

Strategy and Organizational Design

Firms have placed increased importance on the role of strategy and strategic planning because the skills associated with getting a product or service out the door have proven inadequate for managing in a complex environment.¹⁶ Accordingly, American business has modeled its basic structure with the role of strategy and strategic planning in mind. Specifically, businesses have structured themselves to cope with volatile environmental conditions by distinguishing between two different sources of uncertainty: (1) that which arises from short-term operations and (2) that which comes from long-term changes.¹⁷ Firms have typically restructured their organizations so that different levels specialize in these two kinds of

uncertainty. Corporations now have an office of the president responsible for the management of day-to-day uncertainties and short-range planning and a chief executive officer (CEO) responsible for longer-term changes and uncertainties. Sometimes the same individual is president and CEO, but the functions are clearly delineated. This form of organization allows a separation of responsibilities and authority. It discourages the CEO from involving himself and top management in daily operations, and focuses line managers on what they do best: problem solving related to their particular business niche. The corporate president reports to the CEO, and the CEO reports to the board of directors. This reporting hierarchy defines the CEO role as integrating the conduct of day-to-day operations with long-term corporate needs. Because of the integration of these ideas into the organizational design of American business, the role and emphasis on strategy and strategic planning cannot be dismissed as a transient fad.¹⁸

All American corporations do not achieve a good balance in separating the long term from the short term. Some companies, obviously, have CEOs who intrude into daily operations and micromanage projects. However, companies identified as industry leaders emphasize achieving a balance. Similarly, in the Japanese Kanban system, Japanese upper management provides only broad guidelines for operations on the shop floor letting floor supervisors do their own planning in response to inventory problems, small crises, and job assignment.¹⁹

In 1961, the U.S. Defense Department tried to institute a similar organizational approach. The Secretary of Defense became the CEO, and the assistant secretaries of defense and service heads became line managers who reported to a "president" in the form of the Deputy Secretary of Defense. The CEO, Robert S. McNamara, reported to his "board of directors" in the White House. Although McNamara tended to intrude excessively in daily operations, DoD's top leadership following the reorganization did assess a changing international security environment and worked to push the Defense Department in ways better able to achieve perceived U.S.

interests. For example, DoD changed the basic national military strategy in at least two ways: (1) it shifted from a reliance on nuclear forces to conventional forces and (2) changed capabilities from a large slow-reacting military reserve to a force that included considerable quick-reaction capability and an associated command for limited contingencies in the form of STRIKECOM.²⁰

Developing Strategy, Managing Strategic Change, and the Role of Senior Leadership

Strategy relates an organization to its changing environment. As discussed, there is also a connection between strategy and organizational structure. In relating a changing environment to the organization, top management has to get those lower in the corporate hierarchy to alter what they are doing. At a minimum, any strategic effort has to consider two layers of hierarchy, top management (the CEO) and line management. To develop an appropriate strategy, the senior leader of the organization must possess the necessary attributes, perspectives, and imperatives to: (1) look at the organization as an open system operating in a multifaceted, complex environment; (2) form a realistic, attractive, and credible vision of the organization's successful end state; (3) and develop a strategy and action plan to bring it about.^{21 22 23}

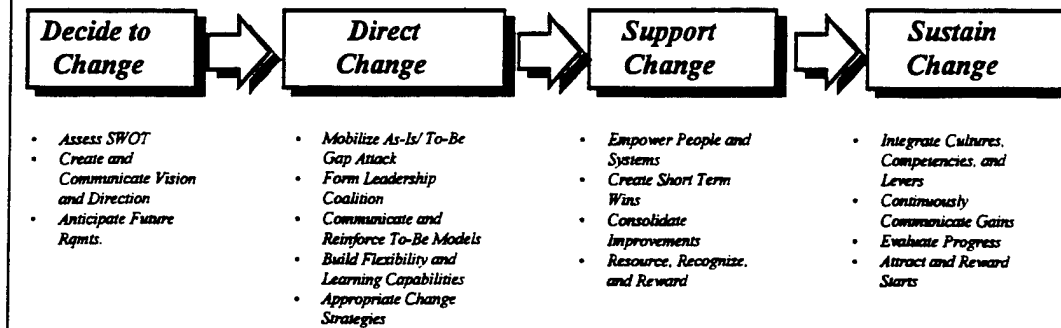
Senior-level leadership is the art of direct and indirect influence and the skill of creating the conditions for sustained organizational success to achieve the desired result. Primarily, it is the art of being able to manage strategic change by taking a vision of what must be done, communicating it in a way that the intent is clearly understood, and then being tough enough to ensure its execution.²⁴ The driving elements for change are the organization's senior leadership and the environment.²⁵

Senior-level leadership and the development of strategy involves knowing how to blend selected leadership and management concepts into a personal strategy that is suited to the environment.²⁶ If effective, the senior leader will align the organization on an axis pointed in a

common direction. Organizations are most effective when their major components are aligned with each other.²⁷ As different facets of the organization achieve objectives that support the overall vision, the organization will develop an inherent synergy within the culture, processes, and structures of the organization. The organization will learn, gain positive momentum, and experience a decrease in tension as the new culture, processes, and structure take hold. Learning is critical. The ability to learn faster than your competitor may be the only sustainable competitive advantage.²⁸

Leadership is an influence process and refers to motivational relations between the leader and the led.²⁹ Leadership is about coping with change by setting a direction and aligning, motivating, and inspiring people.³⁰ Bringing about major change in a large and complex organization is a difficult and tension filled task. Specifically, the task itself is a strategic process that involves determining the need for change, recognizing what the change should be, directing initiation of the change, supporting the change, and sustaining change after implementation. The following model in Figure 2 depicts the leadership activities that are needed to set direction and bring about effective strategic change.³¹

Steps Necessary for Effective Change



SW

OT-Strengths, weaknesses, opportunities, and threats

Fig. 2. Process Model to Manage Strategic Change.

Strategic Business Models

Before an organization's senior leadership is able to implement a specific strategy, they must first develop the strategy itself. Strategy is derived from an organization's interests and environment. The simple model of strategy development and strategic planning takes a set of fixed interests and arrays them against a fixed environment, and then develops a strategy for attaining the interests subject to the constraints of the fixed environment. The simple strategic model is shown below in Figure 3.³²

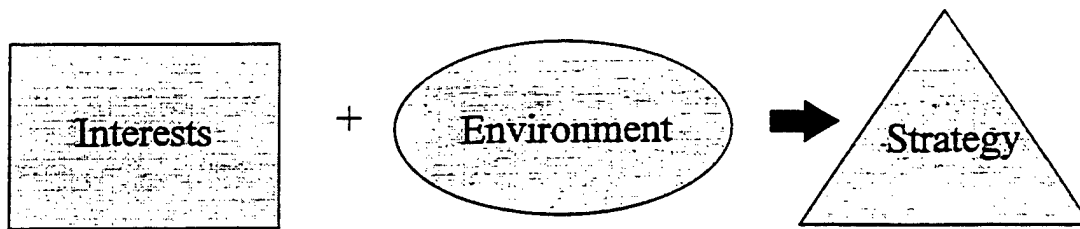


Fig. 3. Simple Strategic Model.

For short-range planning, or in situations when interests and the environment are unchanging, the simple model is useful. In the short term, neither interests nor the environment are likely to change significantly. Similarly, in a fixed competitive relationship, like the automotive sector in the 1950s and 1960s, neither the environment or interests such as market share and return on assets changed all that much, even in the relatively long term. Interestingly, in this case, the difference between middle line and top management perspectives also disappears. If the market is stable, interests are fixed, there is little reason to try to reshape the environment, and there is little danger that resources will be squandered on the wrong business. In the 1950s, General Motors and Ford were focused on automobiles. Neither firm was tempted to diversify into the financial services industry and other businesses as they have today.³³ A parallel situation existed in the realm of national security during the Cold War. During that time, it was clear how vital NATO was to overall global security and the necessity of U.S. power in the face of the Soviet threat. In the environment now confronting the United States, it is less clear what the future environment will be like, and what our interests should be respectively. For example, is an independent European defense community good or bad? Are improved Japanese-Chinese economic and strategic ties a cause for concern or an initial step toward greater prosperity and stability? What should the position of the U.S. be toward further developments? How should the U.S. respond to opportunities to facilitate or block progress?

The simple model is not adequate in situations of fundamental change because interests and environments are uncertain, transformed, or altered.³⁴ Under these conditions, the strategy itself should account for, or at least be able to address, sizable variations. This variation cannot be managed away by more precise detailed planning within the framework of the simple model. For example, given an environment of fundamental change, efforts to demand specificity from the nation's leaders are not valid. Even if the nation's leaders were willing to offer conjecture on an evolving security environment and U.S. interests, it is doubtful that what they would say would inspire much confidence. Under these conditions, the belief that greater specificity of interests and environments is helpful is a weakness of many defense strategy frameworks.³⁵³⁶

There is a similarity between the act of defining the national interest and what in corporate strategic planning is called "defining the business."³⁷ Defining interests may appear to jump ahead to consideration of alternative strategies. In a sense this is true, but a distinctive feature of corporate strategy and strategic planning is its iterative nature. An analogy exists with mathematical programming. A linear program is solved through a series of iterations. However, if a changing environment forces changes in the objective function or the constraints, then the more recent iterations will update the system to reflect the changes. In the same way, a firm is continually monitoring its environment to change trajectory, and to incorporate long-term issues into short-term decisions.³⁸

One way to assess the future security environment is to extrapolate in some fashion from existing trends. This can be done with different "theories" using models of change in technology, politics, or economics. However, most problems of strategic choice are not of a simple kind that can be clarified by projections of any one variable. To address this problem, organizations can combine different variables and trends with a broader set of relevant phenomena. One way to do this is to construct scenarios of alternative futures that distinguish

between different possible future environments. This approach is depicted below in Figure 4 and is called the standard strategic model.³⁹

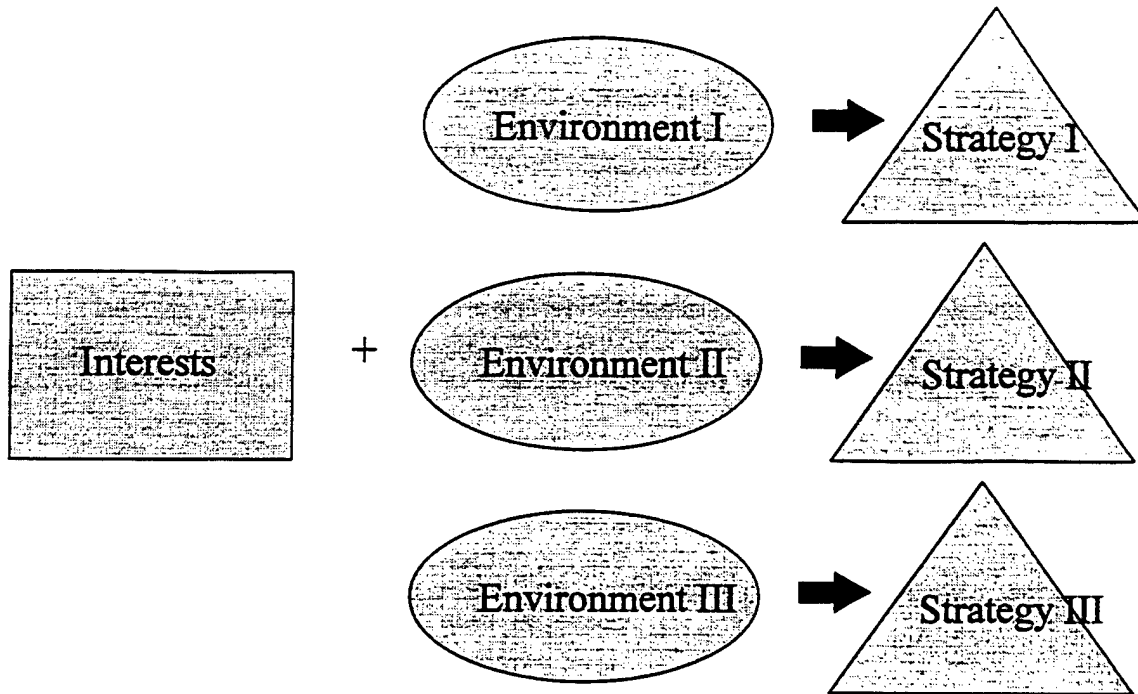


Fig. 4. Standard Strategic Model.

The standard strategic model contains at least one major flaw. It ignores short-term decisions that affect the long term.⁴⁰ For example, General Motors attempts to restrain competition through near term decisions that seek to develop a protected domestic market in the long term. Similarly, if U.S. military decisions over the next five years are irrelevant to the year 2015 security environment, then we must question seriously the value of these decisions. Obviously, the United States can affect the future security environment by its choice of short term decisions. As discussed earlier, the CEO is concerned with the long term and the corporate

president is concerned with the short term. But, the CEO provides his long-term strategy to his president so that the president can steer the organization to the long-term objectives.⁴¹

The alternative environments in the standard strategic model will be different, but not mutually exclusive in all regards. Certain core features will be shared. For example, hyperinflation is a likely characteristic in any set of futures for Latin America. The common features that cut across different environments are termed core environments.⁴²

The real-world environments of business and national security contain surprises and alternative possibilities that generally cannot be conceptualized in advance. The following diagram depicts a complex strategic planning model with core environments, alternative environmental variations, and exogenous contingencies. It is this model that comes closest to how corporations actually do strategic planning. In this advanced model, shown in Figure 5, there are three types of strategies: core, environmental, and hedging.⁴³

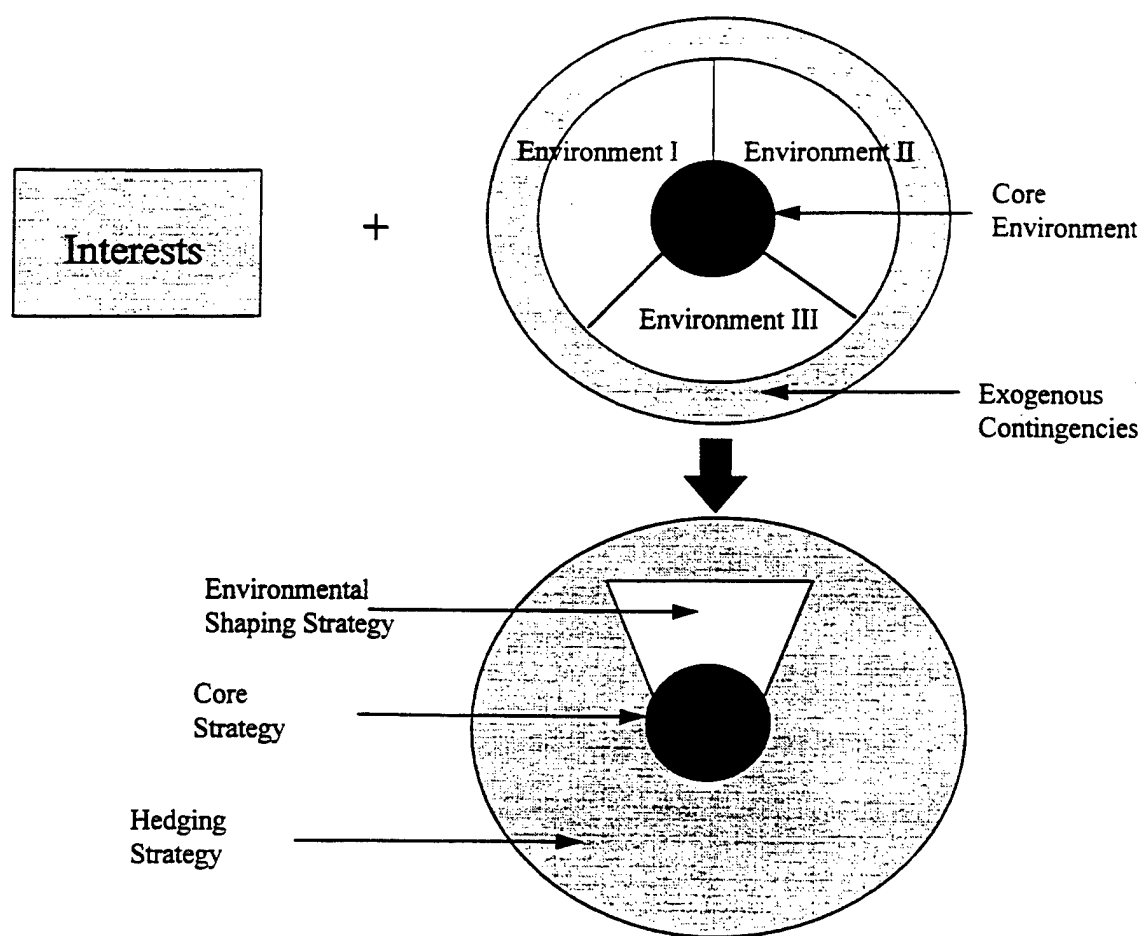


Fig. 5. Complex Strategic Model.

Core Strategy

A core strategy is designed to deal solely with the core environment.⁴⁴ The core environment is that environment common to all of the projected environments. A core strategy consists of all those elements of policy that remain constant regardless of which environment occurs. It is based on a stable core environment. Focusing on the core environment is sometimes difficult because of the natural tendency to concentrate on changes and turning points, rather than on things that remain constant.⁴⁵ It is more exciting to focus on the threat posed by a future radical Islamic state with weapons of mass destruction (WMD) and intercontinental ballistic missiles (ICBMs) than it is to explain why the North Atlantic Treaty

Organization (NATO) has held together for so long. Regardless, a clear statement of the environmental stabilities that a decision maker is likely to face is extremely valuable.

The strength of a core strategy is also its weakness. The strength is that it clarifies how day-to-day operations fit into the organizational overall and how the immediate relates to the long term. For example, planning in support of a core strategy produces a powerful training effect that introduces new members of the organization to the methods of doing things and gets executives to work together as teams.⁴⁶ In the military, the training effect of war games and simulations has a similar impact. The weakness is that a core strategy can become so embedded in an organization that it becomes counterproductive.⁴⁷ For example, many corporations become product oriented rather than market oriented. They see themselves as producing good cars, mutual funds, or hamburgers. They fail to see the more fundamental market aspect of the business as transportation, long term investment for security, or fast food. This causes problems when the environment changes or new competitors enter the market with attractive substitutes.

Opening up a core strategy for review is difficult. This is why a truly fundamental review of strategy is so often resisted. A more frequently encountered problem is not to have an articulated and clear core strategy at all. This creates conditions for bureaucratic warfare. When top management fails to provide direction for the organization or when senior policymakers focus on small-scale, immediate, and rapidly changing issues and neglect the important and long-term interests, environments, and strategies, the system fragments in multiple directions.⁴⁸ Henry Kissinger said that his first problem in the Nixon White House was to move the new Administration away from the crisis management approach of the Johnson years. What he meant was the Johnson Administration had no effective long term strategy, only a short-term Vietnam-oriented crisis-management strategy.⁴⁹

Environmental-Shaping Strategy

The core strategy is supplemented by an environmental-shaping strategy. An environmental-shaping strategy seeks to shape the environment in desirable ways. An environmental strategy enables a firm to cope with the reality that its decisions affect the environment. Corporations often try create a favorable business environment. IBM, as an example, has an environmental strategy of emphasizing the general importance of computing to develop a favorable environment for its products in industry, schools, and government.⁵⁰ Similarly, the U.S. National Security Strategy (NSS) of Engagement and Enlargement states:

U.S. engagement is indispensable to the forging of stable political relations, furthering trade, and the advancement of our interests. Our engagement must be selective, focusing on the challenges that are most important ...and focusing our resources where we can make the most difference.⁵¹

Hedging Strategy

Environmental shaping strategies do not always succeed in shaping the environment in a positive way. In addition, the test of good strategic planning must not only encompass how well the strategy does under likely environments but also how well it fares in response to unforeseen circumstances. Firms are sometimes surprised by new and unexpected market developments such as macro-economic shifts, new competitors, radical new technology, and dramatically different product or service concepts. To handle such contingencies, firms devise hedging strategies. Similarly, the military performs contingency planning as a hedge so that at least some preparation is in place prior to being required to act in response to some crisis.

A hedging strategy copes with external contingencies and with contingencies arising from other environments.⁵² The hedge that has to be considered is that the desired environment will not follow from the core and environmental strategies, or that some unanticipated shock will occur. The assumptions that encompass a firm's hedging strategy may conflict with the basic

assumptions of its core and environmental strategy.⁵³ Business entities recognize that failure to develop hedging strategies exposes the firm to large risks from sources that are little understood because their features and consequences have not been considered.⁵⁴

Other Strategic Business Concepts

Defining the Business

The strategy alternatives facing American railroads in the 1940s is often used as case study in learning about what it means to define the business.⁵⁵ American railroads did not react when other competitors captured passenger and freight business because they considered themselves to be in the "train business." The railroads focused on operating trains on time with minimal disruption to passengers or loss of freight. The criteria by which they judged themselves was on-time performance, freight-damage or loss, and service disruptions. Consequently, the railroads failed to see trucking or air transport as competitive threats. What the railroads failed to understand was that they were not in the train business; they were in the transportation business. The failure of the railroads' top management to adequately conceptualize their business prevented them from addressing their true strategic situation, and ultimately led to their long-term decline.⁵⁶ Similarly, examples from history demonstrate the relevance of asking what "business" one is in for the development of military strategy. Nineteenth-century France could not decide whether it was a major continental power or a maritime power, and consequently became neither.⁵⁷

Defining the business involves matching interests with environment. Often, businesses define themselves by matching the firm's products with markets. A more advanced approach is to define a business as the intersection of three distinct dimensions: the functions that are being

carried out; the groups one seeks to affect; and the mechanisms to be used.⁵⁸ This approach seems analogous to the ends, ways, and means of military strategy.

Threats from New Competitors

A key concept in business planning is dealing with new competitors. Similarly, the U.S. must assess threats from potential new competitors. At the full-scale military level, outside of the Soviet Union, this possibility has been remote because of the high entry barriers associated with becoming a superpower. However, there are other ways to attack U.S. interests than by being a military peer competitor. Indirect or asymmetrical attacks using economic challenges, terrorism, and unconventional warfare are also viable methods.

The concept of an entry and exit barriers are relevant when considering competitive rivalry. Broadly speaking, if entry rate barriers are high and sharp retaliation is certain, then the entry rate of new competitors is low.⁵⁹ There are many different kinds of entry barriers: large amounts of capital, proprietary technology, experience, and intangible skills to name a few. An associated but different concept is that of exit barrier. Exit barriers are structures or inhibitions that reduce the likelihood of a firm leaving an industry. The thrust of this discussion is to suggest analyzing U.S. environmental strategies to affect entry and exit barriers throughout the globe. It might be possible to raise entry barriers to prevent new entities from becoming competitors while lowering exit barriers to compel existing competitors to give up their arsenals to create a less threatening environment.⁶⁰

Intensity of Competition

Many industries are characterized by relatively low levels of competition, whereas others are characterized by high levels. Several factors including signaling, diversity, peer equality, regulation, and entry and exit barriers influence the intensity of competition.⁶¹

As stated, some industries are characterized by signaling amongst competitors.

Signaling may either increase or decrease the ferocity of competition. A market signal is any action by a competitor that provides a direct or indirect indication of its intentions, motives, goals, or internal situation.⁶² The behavior of competitors provides signals in a myriad of ways. Some signals are bluffs, some are warnings, and some are earnest commitments to a course of action. A firm may signal by making statements in trade journals, making public announcements performing key acquisitions, and by conducting other business activities. Recognizing and accurately reading market signals, then, is of major significance for developing strategy and is an essential complement to competitor analysis.⁶³

Signaling is loosely connected to game theory. Game theory is the study of strategic interaction. Game theory describes the structure of various kinds of games that identify what choices self-interested, strategically interacting players will make under a variety of circumstances and the outcomes of those choices.⁶⁴ In essence, the outcome for competitors is based not only on the choice of one competitor but on the choices of rivals as well.

A classic game within game theory is the Prisoner's Dilemma. In this game, two prisoners have been apprehended at the scene of a crime. The authorities offer each of the two the same deal: "If you both confess, you'll both get ten years in jail. If one of you doesn't confess, but the other turns state's witness and does confess, the confessor goes free and the silent one goes to jail for ten years plus one extra year for perjury. If neither of you confess, we'll trump up some charge and put both of you away for one year."⁶⁵ What is the outcome of the Prisoner's Dilemma? Using value maximization as the norm, minimization of jail time in this case, the best outcome for both prisoners is to keep silent - to cooperate. If, on the other hand, each prisoner chooses his individually rational play, to turn state's witness and confess, the outcome is socially tragic for the two prisoners because total jail time is maximized.

Business has its prisoner's dilemmas. In business as in much of life, there is the likelihood of further interactions. Those further actions make cooperation possible. For example, if Coke lowers its price to gain market share from Pepsi, Pepsi will follow. Neither gains new customers, but both make less money. Neither should act without identifying and interpreting signals and considering what the other will do.⁶⁶ Or, better yet, they should seek to cooperate by signaling, "...if you don't press too hard, then I won't press you either and we'll both be better off."⁶⁷ Militarily, the sudden and significant addition of new capability is a strong signal that tends to illicit a strong response and increase the ferocity of competition. The battleship, atomic bomb, and the long-range missile are examples. An example of flawed signaling is the comments made by April Gillespie during her meeting with Saddam Hussein prior to Iraq's invasion of Kuwait.

Diverse competitors also tend to intensify competition.⁶⁸ General Motors has found it much easier to comprehend Chrysler than Nissan. Militarily, in a region such as South America, all of the states share much in common and interstate military conflicts are rare. However, in the Middle East, where western states clash with Islamic states, competition is much more intense.

Equally balanced and unregulated competitors fighting for a greater share of a fixed market tend to fight harder to gain the marginal advantage.⁶⁹ Militarily, during the Brezhnev era, Soviet-American competition seems to have peaked when the Soviets believed they were still growing economically and were within reach of military parity.

Low entry barriers and high exit barriers also intensify competition.⁷⁰ Low entry barriers attract competitors to the market because it allows firms to pursue profits with low risk and small investment. High exit barriers confine energies within one line of competition. Firms tend to compete more fiercely if they perceive they will lose their existing investment by getting out.

Competitor Analysis

One key feature for successfully analyzing a competitor is to distinguish between the interests of the corporate parent and those of lower business units. Considering the differences between the various parts of a competitor's organization allows one to establish a firmer basis for anticipating and predicting competitor reactions. Rather than being considered a monolithic actor, a competitor should be viewed as a loose coalition of groups each with differing objectives.⁷¹ Militarily, understanding the existing interservice rivalry within the U.S. defense establishment is an example of this kind of analysis.

Being Market Focused, Not Product Focused

Many companies today are striving for greater competitiveness by reorganizing themselves around markets rather than products. IBM, for example, has reorganized into divisions that deal with small, medium, and large corporations, and a government services division. This is a change from being organized around mainframe computers, office products, and small systems.⁷²

A market focus relates what a firm does to conditions in the world, whereas a product focus causes a company to be excessively inward looking, oblivious to environmental changes, and resistant to all but inevitable changes. As discussed earlier, the development of strategy can be viewed as ways to make organizations learn faster by being more in touch with and responsive to environmental changes. Militarily, the U.S. may want to increase the role and flexibility of CINCs by providing them with contingency funds for use in nation-building activities, disaster response, and security assistance.⁷³

Asset Redeployment And Restructuring

The dominant trend in large American companies today is to "downsize" to be more flexible and quick reacting. Companies are getting rid of "dogs," their subdivisions that do not contribute proportionately to overall performance. One view of top management is that its role is to search through the portfolio of owned companies for dogs to divest, and stars to invest in.⁷⁴

A key feature of this trend is the tendency to identify size with weakness and fat, rather than strength. Throughout this period of corporate restructuring there has been a discipline to focus on key strengths, getting away from highly diversified conglomerates to a smaller collection of companies. Virtually every Fortune 500 company today is smaller than it was in 1980, yet most are better competitors. General Electric, for example, employs 300,000 people, a full 100,000 fewer than in 1980. About one-half of the headquarters staff in Fairfield, Connecticut, was eliminated. The corporate experience of GE, American Express, and others is that their image, self-perception and performance improved as slack was eliminated and resources were focused.⁷⁵

For defense strategy there is an important lesson in that the automatic tendency to see size as strength may be ill-founded. There are many military examples where this thinking has developed. The army of Ferdinand Marcos in 1970 consisted of 40,000 soldiers organized into a highly effective counterguerilla force. In 1986, the Philippine Army had 200,000 soldiers, but was utterly incapable of handling the guerilla threat.⁷⁶

The Formulation of Business Strategy

The broad considerations associated with the formulation of business strategy can be structured into a generalized approach.

1. What is the business doing now?
 - a. Identification. What is the implicit or explicit current strategy?
 - b. Assumptions. What assumptions about the organization's relative position, strengths, weaknesses, competitors, and industry trends must make sense for the current strategy to make sense?
2. What is happening in the environment?
 - a. Industry Analysis. What are the key factors for success and the important industry opportunities and threats?
 - b. Competitor Analysis. What are the capabilities and limitations of existing and potential competitors and their probable future moves?
 - c. Societal Analysis. What important governmental, social, and political factors will present opportunities or threats.
 - d. Strengths and Weaknesses. Given an analysis of industry, competitors, and society, what are the company's strengths and weaknesses relative to present and future competitors?
3. What should the organization be doing?
 - a. Tests of Assumptions and Strategy. How do the assumptions embodied in the current strategy compare with the analysis? Does the new strategy meet the tests of consistency?
 - b. Strategic Alternatives. What are the feasible strategic alternatives given the analysis?
 - c. Strategic Choice. Which alternative best relates the company's situation to external opportunities and threats?

Comparative Approaches

General

It is important to review existing literature to develop a perspective on the research question to help formulate a research approach, to isolate important and relevant previous research on the subject in order to develop a broad grasp of the body of knowledge that constitutes the particular field of investigation, and to identify patterns and gaps in the current literature that this research will attempt to fill.

In general, there is a great deal of information on business strategy, strategic management, and related business topics. Likewise, there is also a large body of information on the formulation of national security and national military strategy. However, information that more closely correlates competitive business strategy with national military strategy is relatively sparse.

However, the RAND National Defense Research Institute study "Strategic Planning for National Security: Lessons from the Business Experience" is extremely relevant and is the principal extant work. Some of the works that do correlate business strategy with military strategy are in the area of game theory. Game theory is the study of strategic interaction. Game theory describes the structure of various kinds of games that identify what choices self-interested, strategically interacting players will make under a variety of circumstances and the outcomes of those choices. The following discussion provides an overview of the principal extant works and other sources and is the foundation of the literature review.

Principal Extant Works

The report, "Strategic Planning for National Security: Lessons from the Business Experience," by Paul Bracken, was developed as part of a larger project on global military

challenges and opportunities, sponsored by the Under Secretary of Defense for Policy and the Defense Advisory Group. The project is concerned with alternative military strategies for the years ahead that fit into a larger national security framework. The work was conducted in the RAND Strategy Assessment Center (RSAC), which is part of RAND's National Defense Research Institute, a federally funded research and development center sponsored by the Office of the Secretary of Defense. The analysis begins with the premise that since U.S. defense planning is at a crossroads it is useful to review not only discrete issues, but even basic concepts of strategic planning. The study reviews concepts used in the business world to build insights about how to view current and prospective problems, opportunities, and choices. Bracken discusses core, environmental, and hedging strategies. The author also comments on business concepts such as defining the business, dealing with new competitors, controlling the intensity of competition, entry and exit barriers, and the need to redeploy assets and restructure the organization and their possible correlation to issues of national security.

In his book, Competitive Strategy by Michael E. Porter, the author provides the tools and techniques to conduct an industry and competitor analysis. He addresses: (1) the fundamental factors that determine the nature of competition in business; (2) the three generic competitive strategies for coping with industry structure; (3) how to recognize and act on market signals from competitors; (4) forecasting how the structure of an industry will evolve; (5) the costs, risks, and returns, of differing strategies; (6) competing effectively in an emerging industry; and (7) selecting new industries to enter.

In Porter's latest work, The Competitive Advantage of Nations, he conducted detailed research about ten leading nations. Specifically, he builds on his earlier theories to explore what makes a nation's firms and industries competitive in global markets. He describes how a company can tap and extend its nation's advantages in international competition. He also

provides a blueprint for government policy to enhance national competitive advantage and outlines the agendas in the years ahead for the nations studied.

In the book Competing for the Future Gary Hamel and C. K. Prahalad discuss: (1) how to move away from restructuring and reengineering toward corporate revitalization.; (2) methods to develop industry foresight to proactively shape industry revolution; (3) ways to leverage resources to enable firms to achieve impressive goals despite resource constraints; (4) ways to build core competencies for the future; and (5) how to extend the boundaries of corporate imagination to revitalize the process of new business creation.

In the book Forecasting, Planning, and Strategy for the 21st Century, Spyros G. Makridakis discusses both competitive and noncompetitive business strategy, the problems and opportunities associated with each, and the relationship of these business approaches to military strategy.

The Defense Science Board, chaired by Dr. John S. Foster, in their study, Investments for 21st Century Military Superiority, provide insights on potential future adversaries, the nature of the ongoing revolution in military affairs (RMA), and recommendations for change.

Summary of the Literature

The literature provided an adequate framework to formulate a research approach and a broad grasp of the body of knowledge that constitutes the area of study. As stated, the literature provided a fairly comprehensive source of information on business strategy, strategic management, related business topics, national security issues, and concepts in national military strategy. Most importantly, the literature identified opportunities to pursue linkages between the two broad areas of study.

In the remaining sections, the study addresses the state of the strategic environment, applies a framework for business analysis, makes recommendations, suggests an action plan, provides contemporary and historical insights, and offers conclusions.

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CHAPTER THREE

STRATEGIC DILEMMA AND A FRAMEWORK FOR BUSINESS ANALYSIS

General

One of the observations from history is that preparations are often made to fight the last war rather than the next one. Military forces have traditionally had two principal purposes: (1) to deter war and (2) to fight it successfully if deterrence fails. Deterrence depends as much on perception as actual military value. On the other hand, success in battle depends on actual capabilities, skills, and other factors. However, no one really knows prior to conflict what mix of strategy, tactics, skills, and capabilities will provide the greatest source of competitive advantage and prove to be the most effective.

Once the war starts, the stress of combat forces rapid change in elements of the mix that are inappropriate. For example, in the summer of 1941, the U.S. Navy was a battleship navy with battleship admirals. Japan's effective employment of naval airpower forced change. By the summer of 1942, the aircraft carrier and the carrier admirals had taken over. Obviously, nobody can predict the future. However, because the military is the steward of much of the nation's resources, both human and financial, a key challenge remains to try to get the mix at least approximately right.

Strategic Dilemma

The nation is in the midst of a strategic dilemma. A focal point of that dilemma revolves around, first, the amount of resources to be spent on defense, and, second, given that amount, the

actual structure of military forces and their strategy for employment. In a democracy, the magnitude and use of resources for defense has always been a source of debate. However, the collapse of communism and the end of the cold war brought about profound changes in U.S. defense policy. In the aftermath following the collapse of the U.S.S.R. and the end of our bipolar world, the U.S. began to shift significant resources to address pressing domestic concerns.

The U.S. defense establishment is in the midst of a rapid resource decline while it continues to struggle with roles and missions. The military is losing access to the resources that it needs for strategic renewal while it is determining what the nature of that renewal should be. Since 1989, the U.S. Army alone has cut end strength by 36 per cent, over a half a million people. At the same time, less available manpower and increased involvement in military operations other than war (MOOTW) has caused deployments to go up by over 300 per cent increasing operations and maintenance costs and adversely affecting morale.

The Army's total obligational authority (TOA), in real dollars, has gone from \$100 billion in Fiscal Year 89 to \$60.9 billion in Fiscal Year 96. Virtually all modernization programs have either been reduced, delayed, or canceled. The Army's procurement programs have been cut at twice the rate of overall total obligational authority (TOA) and are at their lowest point in twenty years. The Army research, development, and acquisition (RDA) budget is now a much smaller piece of a much smaller pie--25 percent of \$96 billion in Fiscal Year 89 to 18 per cent of \$60 billion in Fiscal Year 96.¹ As a percentage of GNP, that is the smallest Army budget since the establishment of the Department of Defense in 1947.² General Shalikashvili, Chairman, Joint Chiefs of Staff recently remarked, "we are 80 percent of the way down, and I fear that we are downsizing a 20th Century force without fully addressing the needs of the 21st Century."³

What is the Business Doing Now?

As stated previously, there appear to be strong similarities between the behavior of firms in competition in the global marketplace and of nation and subnation states in the global security arena.

Again, the essence of formulating effective strategy is relating and aligning an organization to the forces influencing its environment. The strategic objective is to find or create a position where the organization can best defend itself against these forces or influence them in its favor. However, decisions on strategy and force structure that are driven by nonmilitary economically based sources of competitive advantage such as economies of scale may or may not necessarily be appropriate.⁴ For example, larger and more capable aircraft carriers may be cost effective and possess a high degree of deterrent value, but not offer a competitive advantage in battle because of higher potential vulnerability and enemy actions that are asymmetrical to U.S. planning. Competing business entities often act asymmetrally to offset or minimize each others strengths while maximizing their own. In business and war, a direct frontal attack is usually both costly and ineffective.⁵

At any rate, as discussed previously, there are at least some parallels between the formulation of business strategy and military strategy. Therefore, as a conceptual bridge, an analogy has been drawn between the military spectrum of conflict and Porter's strategic industry target axis in the discussion of generic competitive strategy.⁶ During the latter part of the cold war, the U.S. seemed to employ a focused differentiation strategy that leveraged high quality soldiers and technologically superior equipment. The particular industry segments that were addressed by the apparent strategy was deterrence of strategic nuclear war with the U.S.S.R. and deterrence of high intensity conventional war in Europe and Korea. Today, with fiscal constraints, new missions, and a cold war defense support infrastructure, this strategy is "stuck in

the middle” trying to respond in a low cost way to a broadly differentiated threat with a premium priced organization that is differentially focused on a narrow segment that is not fully representative of the current and future threat.

What Assumptions Allow the Current Strategy to Make Sense?

Secretary of Defense Cohen’s predecessor, Dr. Perry, reduced manpower and deferred modernization to maintain soldier and equipment readiness, cut costs, and support the increased operational tempo of current missions. Dr. Perry also chose to support soldiers and military families to bolster sagging morale and preserve manpower quality. In the short term, this approach is executable. If force size is dramatically reduced, you can keep the most modern equipment in the hands of the high quality forces that remain. There is less need to procure new equipment. However, this action suggests only a temporary strategy that offers only transient advantages that are clearly not sustainable.

“What is Happening in the Environment?”

The essence of formulating competitive strategy is relating an organization to the forces influencing its environment. The goal of competitive strategy is to find a position where the organization can best defend itself against these forces or can influence them in its favor. According to Porter, an analysis of the environment involves a societal analysis, a competitor analysis, an industry analysis, and a comparison of strengths and weaknesses.

1. A societal analysis addresses what important governmental, social, and political factors will present opportunities or threats.
2. A competitor analysis looks at the capabilities and limitations of existing and potential competitors and their probable future moves.

3. An industry analysis determines the key factors for success and the important industry opportunities and threats.

4. A comparison of strengths and weaknesses uses the analysis of industry, competitors, and society and determines the organization's strengths and weaknesses relative to present and future competitors.⁷

The following Porter Business Analysis Model, shown in Figure 6, depicts the principal environmental forces that will most likely drive the formulation of U.S. national military strategy for the twenty-first century.

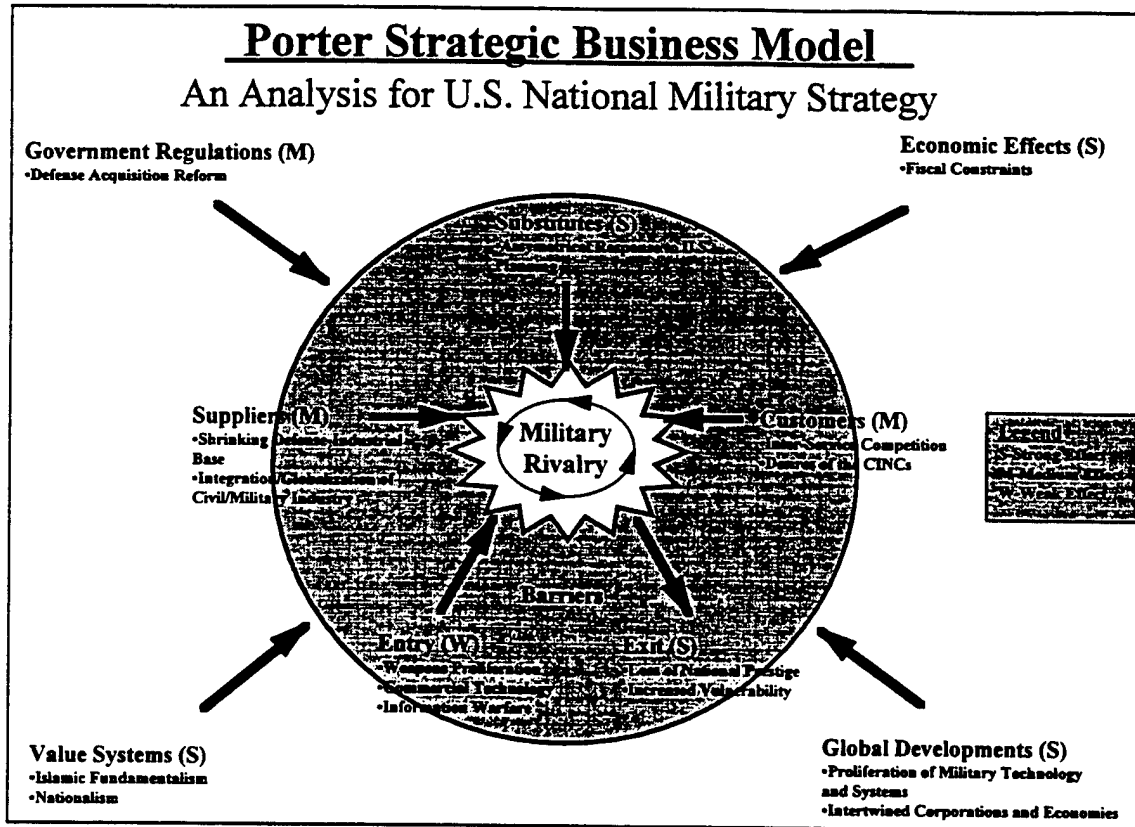


Fig. 6. Porter Strategic Business Model Applied to Analyze U.S. National Military Strategy.

Societal Analysis

Societal analysis attempts to identify important governmental, social, and political factors that will present opportunities or threats.⁸

Globalization

Globalization creates both significant strategic opportunities and threats. The globalization of industry and technology promises to accelerate transnational integration and cross-fertilization in engineering, technology, and management.⁹ Commercial technologies have already surpassed defense unique technology in sophistication. Globalization also makes commercial microelectronics and other technologies more accessible. Industry will seek to develop and to exploit new opportunities with joint ventures and other teaming arrangements to market superior products and services globally. However, increased accessibility will facilitate incorporation of these technologies into weapon systems at a higher rate and at lower cost. This trend will increase the problem of weapons proliferation in both quality and quantity. The impact of proliferation of modern arms was shown during the Falkland Islands conflict in 1982. Argentina possessed six Exocet missiles and four Super Entendard strike fighters capable of carrying the Exocet that they purchased from France. The Argentine military was not yet trained to use the Exocet, but they learned how and did remarkably well. They launched five of the six missiles hitting and sinking three British ships--the destroyer *Sheffield*, the transport *Atlantic Conveyor*, and the assault ship *Sir Galahad*.¹⁰ Finally, globalization seems to be driving a shift from the power of individual nation-states to clusters and regional centers of power.¹¹ The effects of this shift are not clear. The regional blocs that exist today or appear to be forming are: (1) Canada, U.S., and the Caribbean States; (2) Latin America south of Mexico; (3) Western Europe; (4) Eastern Europe and Russia; (5) China, Japan, and Southeast Asia; (6) The Islamic World from Morocco to Indonesia; (7) India; and (8) Africa south of the Sahara.¹²

Fiscal Constraints

Fiscal constraints create both significant strategic opportunities and threats. The magnitude and extent of the impact of reduced fiscal resources on the military was discussed earlier. Societal demands for tax relief and a balanced federal budget do not offer much prospect of change since defense is one of the few areas of the budget that is discretionary. However, it is these very demands and other pressing domestic concerns that have created the impetus for change in government business practices to cut costs, improve performance, and eliminate activities that are not value added.

Regardless, sacrificing research, development, and systems modernization to the extent discussed has a profound impact on our ability to respond to new threats and fight future wars. Analysis of the modernization issue from the aspect of a commercial firm in the business sector offers important insights for defense. Business recognizes the critical role that investment in research, development, and plant modernization have on their ability to compete. In this analysis, a disguised firm's expenditures for research and development (R&D) were compared with the effect of those R&D expenditures on sales. A model of that relationship was then derived using multiple regression analysis. The results of that model were then used to predict an effect on future U.S. defense capabilities. The data used in the analysis is from the operations of disguised company from 1965 to 1980 and is shown in Appendix A.¹³ The analysis:

1. Derives the best regression model to explain and predict the sales of a firm as a function of R&D expenditures, personnel doing R&D work, and other variables.
2. Assumes that "sales" is an indicator of the firm's effectiveness in the marketplace.
3. Inputs historical Fiscal Year 89 to 96 data conveying the cuts in military R&D efforts into the multiple regression model of the firm.

4. Derives the predicted value ("sales") as a representative indicator of future U.S. military effectiveness in the world.

The best regression equation was developed using the "stepwise selection technique."¹⁴ The technique incorporates the most significant variables into the model sequentially. The procedure tests the regression data until no additional variables can be added that meet the t-statistic specified. The model was picked that maximized adjusted R-Sq, minimized the standard deviation(s), and had variables with t-ratios $>|2$ or $-2|$. With this approach, the best regression equation was determined to be "SALES Q = - 2763 + 0.795 SALESQ-1 - 8948 Q3 + 6.31 R&DEXP-7."

The model has an Adjusted R-Sq of 92.9%. This factor indicates that the model explains 92.9% of the observed variation. This close correlation is depicted graphically in the scatter plot of actual and fitted values for lagged expenditures of R&D vs. effectiveness in the market as shown in Figure 7 below.

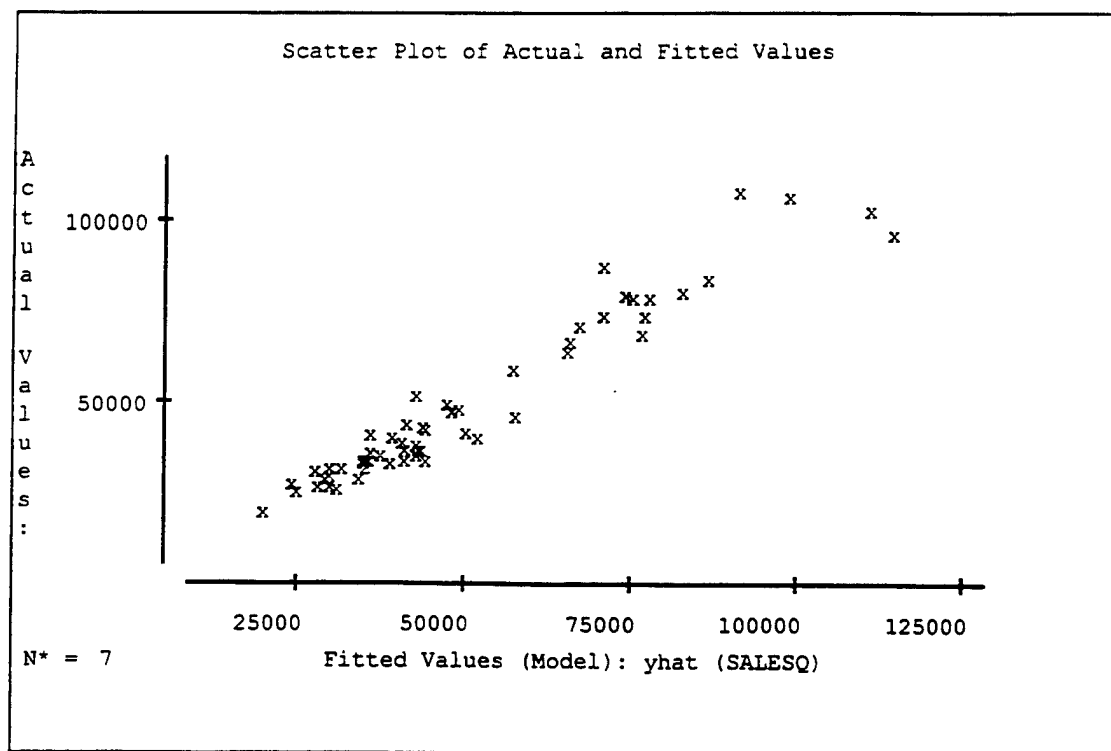


Fig. 7. Scatter Plot of Actual and Fitted Values for Lagged Expenditures of R&D vs. Effectiveness in the Market.

In the model, R&DEXP-7 represents a lagged variable. The variable is R&D expenditures lagged by seven quarters. In the development of the model, the stepwise selection decision criteria inherent in the software algorithm determined that R&D expenditures lagged by seven quarters was the most significant lagged variable and therefore incorporated that variable into the regression model. The inclusion of lagged variables for R&D expenditures makes sense because of the delayed effect of modernization on sales. Similarly, there is a delayed effect on a nation's defense capability as a result of expenditures for R&D. The other lagged variable, SALESQ-1, was introduced to eliminate residual autocorrelation. The Durbin-Watson Statistic (DW) of 2.31 for the model is within the safe zone of $1.6 < DW < 2.4$ which indicates no residual autocorrelation. Diagnostic checks of the model indicate that the requirements for independence were not violated. The diagnostic checks are shown in Appendix B.

The above regression model and relevant defense data were applied to make an inference about U.S. military capability resulting from the reduction in R&D and modernization. In Fiscal Year (FY) 1985, budget authority for procurement was \$96.8 billion, which equates to \$135.7 billion in constant FY 1996 dollars. FY 1996 requested budget authority is \$39.4 billion. Thus, in real terms Department of Defense (DoD) budget authority for R&D and modernization declined by 71 percent between FY 1985-1996. The decline in total DoD budget authority was 39 percent during the same period.¹⁵

The following table shows the effect of reducing the variable that represents lagged R&D expenditures, "R&DEXP-7," by 71 percent while holding other variables constant. The results of the analysis are shown in the following table.

Tabel 1. Empirical Results of Multiple Regression Analysis

SALESQ-1	Q3	R&DEXP-7 (Independent Variable)	PREDICTED SALES (FIT) (Dependent Variable)	STDEV FIT	95% Confidence Interval (CI)
106789	0	5103	114366	2764	(108820, 119911)
106789	0	1480	91489	6024	(79405, 103574)
Results		-71%	-20%		

The model predicts a 20 percent reduction in predicted sales which, by our assumptions represents a reduction of the business and military effectiveness in the market. Obviously, a reduction of 20% in military effectiveness as a result of our failure to modernize is serious given the stakes.

This approach obviously has many limitations. However, although there are significant differences between the behavior of a firm and the U.S. defense establishment, the attempt to draw inferences between the two has some validity. There are many complex issues and

problems that are modeled using unsophisticated methods that yield surprisingly good results. In this case, who can say that certain aspects of the behavior of the two entities cannot be modeled with inferences drawn from one to the other? The intent is try to develop an approach and gain some insight on the effect of decisions that are being made now on implications for the future using a technique that is manageable.

Defense Procurement Law and Acquisition Reform

Acquisition reform and other ongoing efforts create significant strategic opportunities. In early 1993, a congressional mandated review the Section 800 Panel documented, conservatively, that 889 laws controlled every aspect of defense procurement and added as much as 50 percent to the cost of a product simply because it was being sold to the government. An assessment by Coopers & Lybrand indicated the Department of Defense regulatory cost premium is about 18 percent of the contractor's value added costs.¹⁶ In addition, development and fielding of new defense systems requires an eight to ten year cycle time. Commercial cycle time is approximately three to four years. Further, commercial technology advancements are outpacing DoD sponsored efforts in the same sectors that are key underlying technologies for military superiority. Given the rate of growth of new technology, new defense systems can be obsolete before they are fielded.

On 13 October 1994, President Clinton signed into law the Federal Acquisition Streamlining Act (FASA) of 1994, P.L. 103-355. The sweeping legislation repeals or substantially modifies some 225 provisions of federal law to reduce paperwork burdens, facilitate the acquisition of commercial products, enhance the use of simplified procedures for small purchases, strengthen the industrial base that supports the common

defense, and improve the efficiency and effectiveness of the laws governing the manner in which the government obtains goods and services.¹⁷

FASA is applicable to all procurement activities of the federal government. Within the federal government, the Department of Defense (DoD) accounts for over 75 percent of acquisition expenditures. Implementation of acquisition reform is expected to create significant savings, increase value added, and reduce development time of new systems.¹⁸

Jihad, or the Lebanonization of the World

Changing value systems coupled with the willingness to use violence creates significant strategic threats. The character of today's new and evolving threat is economic, religious, ethnic, cultural, and often sub national. These rouge nations and sub national entities do not necessarily use war as an instrument of policy but as an emblem of identity, an expression of community, an end in itself.¹⁹ The ethnic and religious war in Bosnia-Herzegovina has resurrected images of brutality and genocide reminiscent of Cambodia, Nazi Germany, and Stalinist Russia. The war has drawn the major powers into the fray with the hope of trying to stabilize the situation before it engulfs the rest the Balkans.

Most worrisome is the tendency of fanatical religious factions, rogue states, and terrorists to use unconventional weaponry to achieve their ends. In December 1994, the U.S. orchestrated the transfer of almost one metric ton of highly enriched bomb grade uranium from Kazakhstan because of fears that it was at serious risk of being stolen or illegally diverted. Using readily available technology, the material could be used to manufacture about twenty fifteen to twenty kiloton (kt) nuclear weapons. Chemical and biological weapons are far easier and cheaper to manufacture. The nerve gas attack in a Tokyo subway by a fanatical Japanese

religious group exemplifies the availability of these weapons and the willingness of these groups to use them.

Competitor Analysis

Competitor analysis addresses the capabilities of existing and potential competitors and their probable future moves.²⁰ As discussed earlier, the twenty-first century threat spectrum is represented as market segments that the U.S. may compete in as potential military rivals with other entities. In this context, in the following matrix, shown below in Figure 8, potential competitors are arrayed across the spectrum with the capabilities that they are expected to possess.

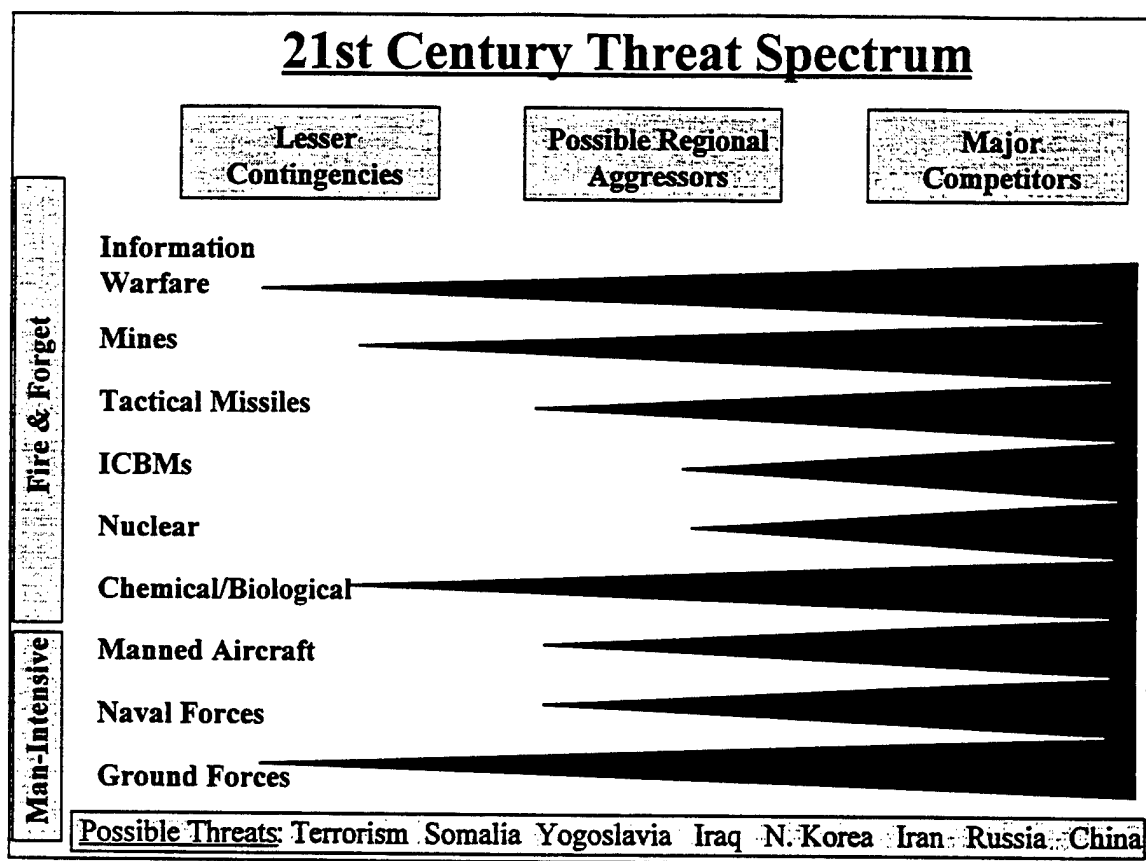


Fig. 8. Twenty-First Century Threat Spectrum.

Current threat assessments project that probable 21st Century adversaries will:

1. Stress U.S. responses in ways perhaps quite different from a North Korean or Middle Eastern major regional conflict (MRC);
2. Have military capabilities, tactics, rules of engagement asymmetrical to typical U.S. planning;
3. Possess intelligence, reconnaissance, surveillance, and target acquisition (IRSTA) assets;
4. Be able to conduct precision strike and will challenge our available missile defenses using a mix of large numbers of inexpensive and a few advanced "stealthy" ballistic missiles and/or cruise missiles;
5. Employ aggressive use of offensive information warfare in its broadest sense;
6. Have underground and covert urban military facilities;
7. Possess terrain stressing to reconnaissance and surveillance;
8. Have some ability to attack low earth orbiting satellites;
9. Structure the majority of his force based on regional ambitions emphasizing a large mechanized army of armor, artillery, and infantry; moderate airpower; and moderate coastal defense;
10. Recognize that he can not directly challenge nor dominate U.S. forces;
11. Acquire some enhanced capabilities based on medium technology to deter, delay, attrit, and stall victory of U.S. and coalition forces;
12. Have the initial advantage in timing and initiative;
13. Be willing and able to employ weapons of mass destruction (WMD) that use nuclear, chemical, and biological killing mechanisms;
14. Fight on his home turf;

15. Be less concerned with causing collateral damage and civilian casualties;
16. Employ quiet diesel submarines with advanced torpedoes; and
17. Rely extensively on land and naval mines.²¹

Industry Analysis

An industry analysis attempts to identify the key factors for competitive success in terms of anticipated opportunities and threats.²² The unified commanders in chief (CINCs) are the four-star general officer commanders responsible for deterring and defeating potential threats in the various operational theaters located throughout the globe. The CINCs maintain a perspective similar to that of middle-level general managers of strategic business units (SBU) that are regionally organized. They have to create an evolving strategically sustainable operation, simultaneously manage operations and develop strategy, balance short-term performance with strategic success, and work within existing structures.²³ The CINCs probably have a more balanced perspective on requirements because they are the leaders that must anticipate and respond to projected threats in areas of potential conflict throughout the world. They are probably less affected by the sometimes unbalanced desires and political power of the separate services and the machinations of politics.

The following model, shown in Figure 9, depicts the relevant strategic processes and relationships that link the CINCs and other decision makers into the process that drives strategy formulation and execution.

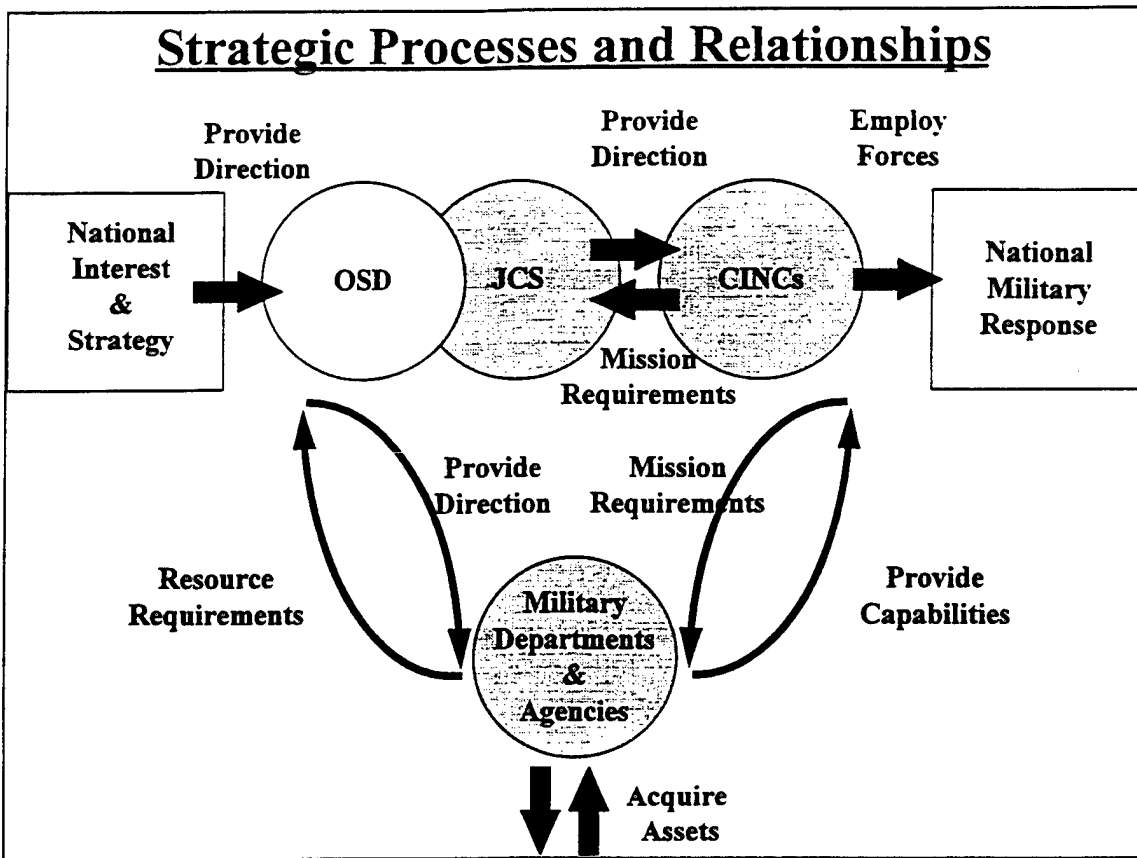


Fig. 9. Strategic Processes and Relationships.

An industry analysis determines the key factors for success and the important industry opportunities and threats. The unified commanders in chief (CINCs) have identified the following joint warfighting capabilities as required core competencies for future success.

1. To maintain near perfect real-time knowledge of the enemy and communicate that to all forces in near real time;
2. To promptly engage regional forces in decisive combat on a global basis;
3. To employ a range of capabilities more suitable to actions at the lower end of the full range of military operations which allow achievement of military objectives with minimum casualties and collateral damage;

4. To control the use of space; and
5. To counter the threat of weapons of mass destruction and future ballistic and cruise missiles to the continental U.S. (CONUS) and deployed forces. ²⁴

Strengths and Weaknesses Relative to Competitors

Given the results of the above analysis, this section assesses U.S. strengths and weaknesses relative to anticipated present and future competitors.²⁵ The following matrix, shown in Figure 10, depicts anticipated threat capabilities as a function of their potential effectiveness against U.S. forces. The matrix also depicts the perceived difficulty that a potential adversary will have in trying to achieve a specific capability. The accompanying table, Table 2, is an assessment of the current U.S. capabilities that the CINCs have identified as required core competencies.²⁶

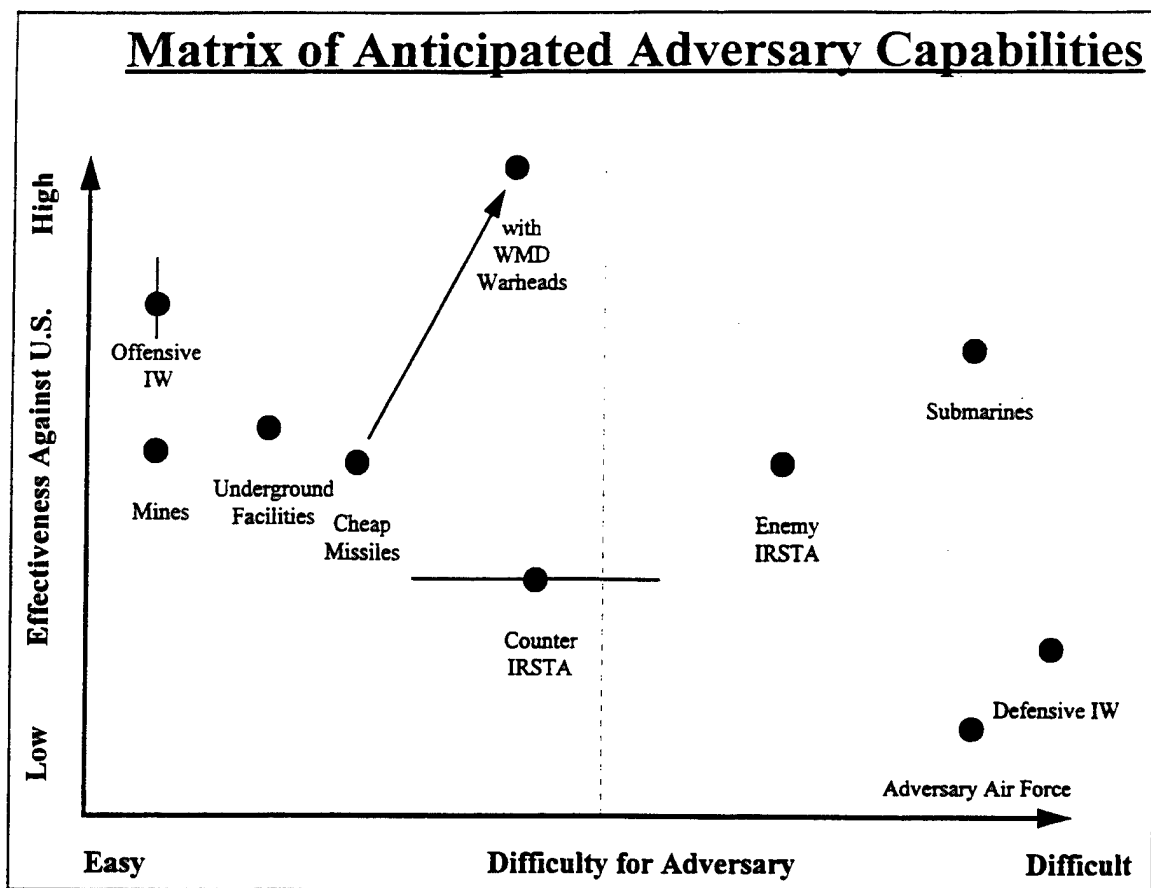


Fig. 10. Matrix of Anticipated Adversary Capabilities.

Table 2. Assessment of Current U.S. Joint Warfighting Capabilities

Joint Warfighting Capabilities	Assessment	Remarks
Intelligence	Good	Excellent strategic technical assets. Limited human assets in non-traditional threat areas. Linkage between strategic assets and lower level tactical commanders is cumbersome and slow.
Information Warfare	Fair	Offensive capability in development. Defensive capability is almost non-existent. U.S. societal and military use of information systems is relatively open with reliance increasing geometrically.
Countering WMD	Poor	Defensive NBC training within the military is routine. Intelligence, covert disruption, and overt preemptive strike offer best available counters. Biological is the primary threat.
Highway, Maritime, and Air Support	Good-Excellent	All services have robust and capable systems fielded. Improvements and new systems are in development. Terrain, weather, and countermeasures affect capability.
Threat Defense	Fair	Limited terminal-defense capability against theater level attack exists. All services are rapidly developing new tactical systems. There is no capability to defend the continental U.S. Large numbers problem and threat countermeasures greatly complicate successful engagement.
Strategic Mobility	Fair	New strategic airlift fleet is being fielded. Modern fast strategic sealift is limited. Current U.S. force structure is heavy requiring many assets to position a minimally capable force in theater. Ports, airfields, and assets in transit are vulnerable.
Air-Submarine Warfare (ASW)	Good	Capable airborne and seaborne systems fielded. Extensive experience gained during the Cold War. Perception exists that robust ASW is no longer needed.
Counter-Mine	Fair	Current sea and land mine clearing systems are slow. Mine detection capability is weak.
Underground Warfare	Poor	Limited capability to locate, identify, target, and assess. Attack capability is principally limited to nuclear.
Space Warfare	Good	Current ground and space-based infrastructure provides significant capability. Many systems are radiation hardened. Redundant assets are available in orbit and on the ground. An anti-satellite capability exists but is limited.
Operations Other Than War (OOTW) and Military Operations in Support of Humanitarian Assistance (MOBSA)	Fair	Current forces are not optimized for OOTW and MOBSA. Deployed forces have showed excellent flexibility in response to non-traditional missions. Deployed forces conducting OOTW are constrained by rules of engagement and susceptible to terrorist attack.

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²Gordon R. Sullivan, General, CSA, "America's Army, Into the 21st Century" (Massachusetts and Washington, DC: Institute for Policy Analysis, 1994), 29-30.

³John S. Foster et. al., 1995 Defense Science Board Summer Study (Washington, DC: November, 1995), 3.

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⁵Spyros G. Makridakis, Forecasting, Planning, and Strategy for the 21st Century (NY: The Free Press, 1990), 154-155.

⁶Porter, 34-46.

⁷Porter, 3-4.

⁸Porter, xx.

⁹Thomas H. Lee and Proctor P. Reid, National Interests in an Age of Global Technology (Washington, DC: National Academy Press, 1991), 45-46.

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¹¹Michael E. Porter, The Competitive Advantage of Nations (NY: The Free Press, 1990), 654-682

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¹³Harry V. Roberts, Data Analysis with MINITAB (San Francisco, CA: The Scientific Press, 1991), 438.

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¹⁵William J. Perry, Secretary of Defense, Annual Report to the President and Congress (Washington, DC: U.S. Government Printing Office, February 1995), 276.

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¹⁷President William J. Clinton, "Remarks on Signing The Federal Acquisition Streamlining Act of 1994," Weekly Compilation of Presidential Documents, Vol. 30 No. 41, (October 17, 1994): 2000-2004.

¹⁸U.S. Congress, Senate, Committee on Governmental Affairs, Report to Accompany S.1587, Federal Streamlining Act of 1994, (May 12, 1994), Report prepared by Senator John Glenn, 103d Congress, 2d Session, Report 103-259.

¹⁹Benjamin R. Barber, "Jihad vs. McWorld", The Atlantic Monthly (March 1992): 53-63.

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²²Porter, xx.

²³David B. Jemison, "The Impact of Middle-Level General Managers," Lecture presented during a course in business strategy while attending the MBA Program at the University of Texas at Austin, (March 22, 1996).

²⁴Stofft, 17-16 to 17-17.

²⁵Porter, xx.

²⁶Foster, 15.

CHAPTER FOUR

RECOMMENDATIONS AND ACTION PLAN WITH SOME CONTEMPORARY AND HISTORICAL INSIGHTS ON STRATEGY

General

Formulating and implementing strategy is essentially figuring out how to get to the future first. At a broad level it, it requires four things: (1) an understanding how competition for the future is different; (2) a process for finding insight into tomorrow's opportunities; (3) an ability to energize the organization for a long and arduous journey toward the future; and (4) the capacity to outrun competitors and get to the future first without taking undue risks.¹

Recommended Strategy

To ensure twenty-first century military superiority, the U.S. must get to the future first. To do this, the U.S. should devise and implement a core strategy, an environmental shaping strategy, and a hedging strategy. This three pronged strategic approach will allow the U.S. to deter and defeat any threat along the entire spectrum of conflict within acceptable risk while being optimized to respond to the specific type of enemy that we are most likely to face; deal with unforeseen threats, and facilitate opportunities to pursue non-competitive behavior that avoids conflict and creates wealth. Specifically, the U.S. should:

1. Adopt a core strategy that is generically defined as broadly differentiated, with a cost advantage, but principally focused to deter and defeat a projected adversary with the capabilities discussed in the competitive analysis.

2. Employ a regionally focused environmental shaping strategy to encourage cooperation and cause the geopolitical environment to develop in a way that is favorable to the U.S.

3. Employ a hedging strategy to respond to unforeseen threats and environmental developments.

To achieve a differentiated advantage, the U.S. should continue to leverage joint and multi-national operations and capabilities, high quality soldiers and training, and flexible technologically superior capabilities. To achieve a cost advantage, the U.S. should achieve economies and rebalance investments by altering our existing combat forces mix and by operating our supporting business practices in ways so as to generate the resources to fuel strategic renewal. To hedge, the U.S. should continue to maintain a credible offensive strategic nuclear capability, devise new methods to destroy weapons of mass destruction (WMD) and their delivery systems with minimum collateral damage, implement strong offensive and defensive information warfare systems, develop a national and regional multi-tiered defensive system against ballistic and cruise missiles, and pursue a vigorous technology research and development effort. To shape the environment, the U.S. should employ strategic partnering with traditional allies and new states and enhance our existing national security strategy (NSS) of engagement and enlargement. The following table, Table 3, summarizes the strategic thrusts, areas affected, and objectives inherent in the aforementioned strategy:

Table 3. Strategic Thrusts, Areas, And Objectives

Strategy Thrust	Area	Objective
Warfighting Skills	-Joint Warfighting Capabilities	-Deter and Defeat Projected Threats -Develop Required Capabilities
Technology Insertion and Acquisition Reform	-Weapon Systems -Business Practices	-Improve Readiness -Reduce Logistical Support -Improve Systems Interoperability -Cut Development Time -Reduce Cost
Joint Service Applications, Military Planning, Operational Support, and Strategic Partnering	-Weapons Platforms -Smart Munitions -Command, Control, Communications, and Intelligence (C3I) Systems -Political/Military/Economic Objectives	-Enhance Cooperation -Share Program Cost -Facilitate Innovative Technical Approaches -Reduce Logistical Support -Improve Systems Interoperability -Stabilize Programs -Establish New Alliances
Privatization and Outsourcing	-Base Support Services -Information Management -Depot Repair -Business Practices	-Cut costs -Improve Performance -Generate Resources for Strategic Renewal

Action Plan

As discussed, to implement the core, shaping, and hedging strategy discussed, the U.S. should develop new strategic relationships and make changes to the military and supporting business practices of its national military apparatus.

Strategic Partnering

As stated, a key element of the strategy should involve new strategic partnering to encourage non-competitive cooperative behavior. In this context, the U.S. should seek to develop a close political, economic, and military partnership with India. India is well on its way to becoming the dominant power in the Indian Ocean area. It has fast growing military and non-

military capabilities. It is becoming a world leader in software development. India has an ideal strategic central position in South Asia located on the Indian Ocean protected by the Himalayan and related mountain barriers. India is a progressive democratic society with a maturing political tradition of independent self-assertion. India places a premium on education and English is widely spoken. India is a vast untapped market of 1.2 million square miles and 1 billion people that could provide new growth for U.S. industry and economic prosperity for the people of that country.^{2 3} Partnering with India not only makes good military and economic sense, but it also fulfills an inherent moral imperative by fostering the spread of democracy.

Military

To ensure affordable and effective twenty-first century military superiority, the U.S., in general, should: (1) place more emphasis on unmanned platforms; (2) shift from platforms to smart/brilliant weapons; (3) emphasize joint operations and continue to clarify roles and missions between the services to reduce overlap; (4) reduce excess force structure, especially in the logistics arena, in terms of both personnel and equipment; (5) develop and field an array of non-lethal systems for operations other than war (OOTW); (6) continue to enhance strategic and theater mobility; and (6) achieve dominant battlespace awareness and cycle time.

Dominant battlespace awareness and cycle time will probably provide the highest return on investment (ROI) of any ongoing initiative because of its leverage effects. Consequently, they should be designated required core competencies. Dominant battlespace awareness means knowing everything going on within an area of operations and accompanying area of interest. The primary objective is to know where all enemy and friendly forces are and what they are doing. However, dominant awareness is much more than knowing the static location of forces. It also includes knowing the combat readiness status or "state vector" for each force element.

This includes knowing the logistics posture of friendly and enemy forces as well as having a prediction of their resupply needs. Dominant battlespace awareness is a necessary condition, but not a sufficient condition, to prevail on the twenty-first century battlefield. The U.S. must also achieve “dominant battle cycle time.” Dominant battle cycle time is the ability to turn inside an adversary, to act before he can act. Rapid planning, strong command and control, and superior mobility are supporting enablers.

Supporting Business Practices

To generate the resources needed for strategic renewal, the U.S. military must change its supporting business practices. It must balance and shift resources from the support infrastructure that performs R&D, procurement, logistics, and maintenance to the generation, projection, and operation of combat forces. To generate the resources needed for strategic renewal, the U.S. military must: (1) right size infrastructure; (2) reduce the cost of weapon system ownership; (3) implement acquisition reform; (4) leverage the national and global industrial base.

Generating the Resources for Strategic Renewal

General

Successful implementation of the core, shaping, and hedging strategies discussed requires adequate resources. In addition to having to maintain and support current operations in the midst of change, successful strategic renewal generally requires additional new investment. However, as discussed earlier, it is doubtful that the domestic political climate will provide new resources for defense regardless of the rationale. Therefore, the U.S. military must generate the resources for strategic renewal internally. Again, this effort involves: (1) right sizing infrastructure; (2) reducing the cost of weapon system ownership; (3) implementing acquisition

reform; (4) leveraging the national industrial base; and (5) leveraging the global industrial base.

The strategy to rebalance investments to fuel strategic renewal is shown below in Figure 11.⁴

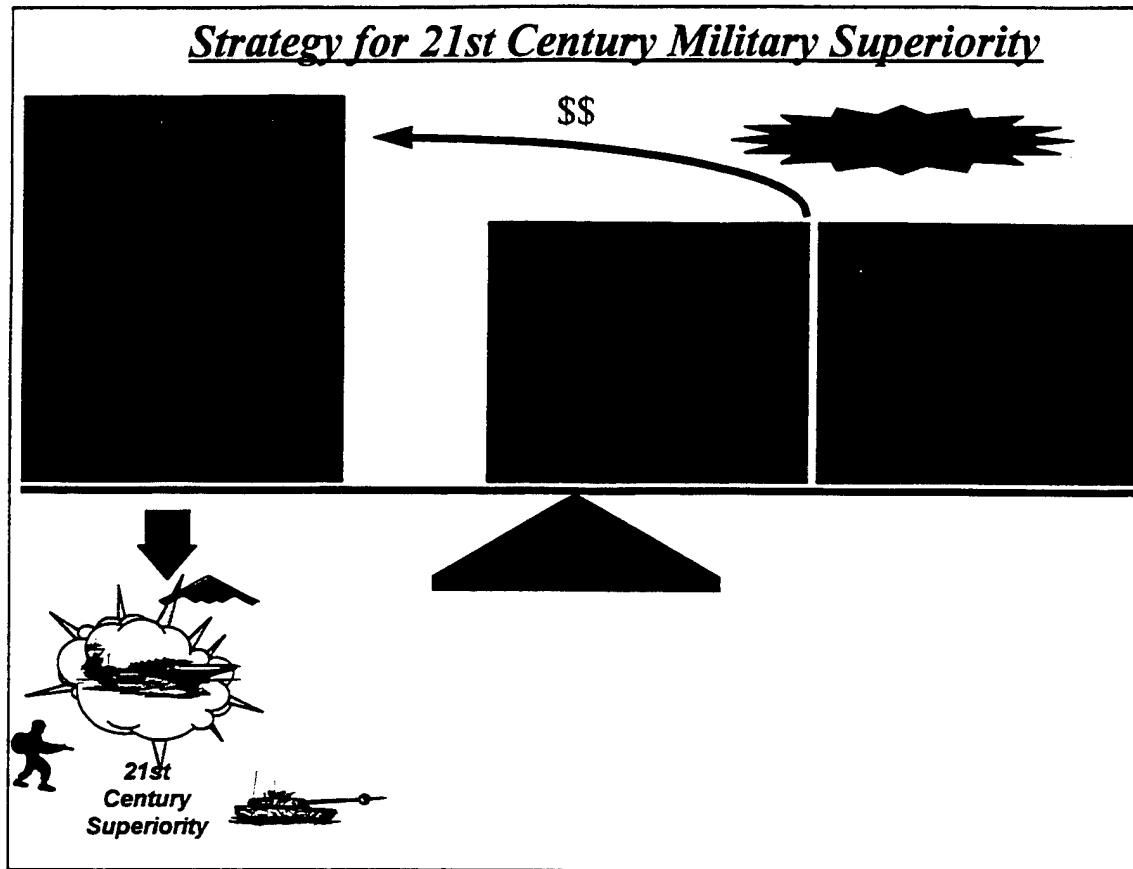


Fig. 11. Strategy to Rebalance Investments to Fuel Strategic Renewal.

Right Size Infrastructure

The military can finance its strategic renewal by adjusting the its "tooth-to-tail" balance. As resources for defense are cut and combat forces are downsized, the infrastructure that supports those forces must also downsize in order to maintain a proper "tooth to tail" balance. Otherwise, the nation sacrifices combat power to pay for support since total resources for defense are fixed within a given budget year.⁵ Since defense resources will probably continue to

diminish over time, the problem of maintaining the right balance is exacerbated because of the time required to dismantle and shift defense support infrastructure. The sooner adjustments are made the better. Any improvements to the organization's cost structure that result from workforce reduction, work redesign, and systematic downsizing save dollars that can be reprogrammed.

The military needs to reduce its infrastructure by an additional 11% over the Future Years Defense Program (FYDP).⁶ The Base Realignment and Closure (BRAC) process is the vehicle DoD uses to adjust infrastructure. However, BRAC costs money in the short term to realize a long term savings. Also, there is a reduction in political support for the military because of the loss of jobs and votes. The important point on right sizing infrastructure is that it will eventually generate savings on a recurring basis. This will provide a key source of funds that can be plowed back into the investment base for modernization and operations.

Reduce the Cost of Weapon System Ownership

The military can finance its strategic renewal by reducing the cost of weapon system ownership. In the acquisition and improvement of systems, the U.S. should adopt a more balanced "cost of performance" view so that weapon system life cycle cost is viewed as an independent variable instead of a resulting dependent variable. This creates a strong imperative for DoD's acquisition and requirements communities to perform the up front tradeoffs and assess the incremental cost of requirements. It is important to make the results of cost-performance trades available to decision makers early in the acquisition process. An example of this approach is embodied in the acquisition strategy for a new class of high altitude, long endurance, unmanned airborne vehicles--a system called Tier II Plus--in which the government has only one driving requirement: a \$10 million unit flyaway price. This requirement stems from the need to

have an economical, reconnaissance asset that we can risk sending into enemy airspace. The focus is to get as much reconnaissance capability--military utility--as possible for \$10 million.⁷

As systems are purchased or modified, the services should stress reduction of overall life cycle cost not just the initial acquisition cost. Sixty to seventy per cent of a system's costs are incurred subsequent to initial deployment of the system.⁸ "Back end" sustainment costs must receive more "up front" attention in the design of new systems. To the extent DoD maintains systems longer, DoD should increase the focus on reducing the cost of ownership for the remaining service life of current systems. Cost of ownership is inextricably linked with how well the overall logistics and support system operates. DoD should develop improved cost visibility in the logistic and support systems. The services should develop new ways to increase the availability of inventory while decreasing the amount of inventory on hand. Logistics must be integrated into the overall warfighting framework. For today's strategic environment, DoD possesses too much of the wrong equipment, outdated information management tools, and organic capabilities that don't address contemporary needs. The new strategy requires a fundamental rethinking of the supporting logistics strategy and the reengineering of logistics systems, processes, and capabilities.

DoD finances are a zero-sum game. Every logistics dollar expended on outdated systems, inefficient or excess organic capability, and unneeded inventory is a dollar not available to build, modernize, or maintain warfighting capability. Logistics consumes about 50% of the DoD budget. DoD's logistics systems are complex and different for each service. Currently, the DoD logistics system can be characterized as a "just-in-case" system. It has lots of just-in-case inventory. In addition to buying this inventory, we must also pay to store, issue, manage, and dispose of it. In contingency operations, if we divert precious airlift and sealift resources to

transport just-in-case inventory, we delay buildup of combat power, impede conflict deterrence and unnecessarily prolong military action with attendant high casualties and other costs. We will also need to divert combat power to defend inventory storage sites in theater. As an adversary's dominant battlefield awareness capabilities grow, large undistributed inventory will be at risk.

Our "just-in-case" system has evolved over the years in response to a cumbersome acquisition system, little or no in-transit asset visibility, and lack of a fast and responsive transportation system. This system is in stark contrast to the "just-in-time" material management systems being implemented by commercial enterprises and our own industrial partners. Boeing and Caterpillar are two companies that substitute fast, cheap transport for costly inventory. As a result, they have a world wide guarantee of parts delivery in 24 hours with no charge if the delivery timeline exceeds 48 hours, for most of their customers requirements. Federal Express has implemented the kind of transport system that allows other companies to reduce their inventories as well. Many of these companies employ technologies that were developed for defense. For example, Caterpillar employs product definition technologies originally developed by DoD called Computer Aided Logistics Support (CALs).⁹ Neither the "just-in-case" or "the just-in-time" system is right. A tailored approach is needed. But, in general, DoD should move away from its just-in-case" system toward more of a "just-in-time" position. To strike the proper balance between efficiency, effectiveness and risk in defense logistics management, DoD should:

1. Selectively substitute private sector logistics support for DoD organic capabilities to achieve greater effectiveness, at less cost, and with no added risk.
2. Develop the ability to rapidly transport material in lieu of maintaining layers of redundant material stocked around the world.

3. Substitute valid real time information regarding the complete status of personnel, weapons, equipment, and supplies in place of our current practice of maintaining redundant capabilities.¹⁰

Implement Acquisition Reform

The military can finance its strategic renewal by implementing acquisition reform. To implement serious acquisition reform, DoD needs to attack the prevailing culture and modify traditional individual and organizational behaviors. DoD needs to shift from an environment of regulation and enforcement to one of incentivized performance and reasoned well informed risk-taking that is based on best commercial practices. In addition, DoD needs to change the role of the testing and evaluation community and use simulation and modeling to reduce system development time and cut cost. DoD needs to shift its culture and process from one of oversight to "early insight." DoD needs to move away from a pattern of hierarchical decision making to a process where decisions are made across organizational structures by integrated product teams (IPT). Integrated product teams include representatives from the defense industry and the "oversight" functional disciplines working together with a team leader to ensure successful and balanced programs. The two most important characteristics of IPTs are empowerment and cooperation. In one IPT pilot project, a joint government and industry IPT established common DoD requirements across production operations at Raytheon Electronic Systems. The project addressed problems like different soldering specifications and government furnished property (GFP) inspection requirements for different contracts for each service. The pilot project was under the executive leadership of the Program Executive Officer (PEO) for Tactical Missiles, Mr. George Williams. The PEO was empowered to implement this pilot by the Under Secretary

of Defense for Acquisition and Technology (A&T), Mr. Noel Longuemare. The following table, Table 4, shows the savings captured from the pilot project.¹¹

Table 4. Annual Savings (\$M) of Dod/Raytheon Ipt Pilot Project

Business Area	Annual Savings (\$M)
Assembly and Inspection	\$32.81
Business Systems	\$2.93
Government Programs	\$1.63
Procurements	\$1.45
Requirements	\$2.56
Component Sales	\$0.50
Total	\$41.88

To finance its strategic renewal by implementing acquisition reform, DoD should:

1. Create an acquisition system that capitalizes on the strengths of all participants in the acquisition process to develop programs with the highest opportunity for success.
2. Eliminate the non-value added barriers that exist between the acquisition practices of the separate services and integrate acquisition professionals from the different services and other nations to facilitate joint modernization efforts and achieve economies of scale and scope.
3. Foster the early, active, and constructive participation of OSD and Component staff organizations with program office teams to develop a sound and executable acquisition strategy and identify and resolve issues as they arise, not during the Defense Acquisition Board Review (DAB).

4. Transform historically adversarial relationships, especially between industry, headquarters staff organizations, and program office teams, into productive partnerships.

5. Implement incentives and increase program stability by allowing program managers and industry to keep for use in their own programs 10-20 percent of any savings generated. The remaining 80-90 percent of the savings can be reprogrammed by the services and DoD.^{12 13}

Leverage the National Industrial Base

The military can finance its strategic renewal by leveraging both the technology and production components of our commercial base. Dual-use strategy is essential in today's world. The commercial sector drives technological change in many areas such as electronics, telecommunications and advanced composite materials. DoD needs to learn how to best capture what is going on in the commercial world. The U.S. can then influence the development of high-payoff commercial technology through application-specific projects without having to make the root investment itself. This investment should be made only when there is a projected value added return in the form of lower prices or increased military utility. DoD should target affordable, leading edge technology that is sustained and continuously improved through the dynamics of the commercial marketplace. Because of resource constraints, the military should anticipate that only the highest priority new programs will be funded. Therefore, DoD should focus on improving the capability, reliability, and service life of existing platforms through technology insertion via cost effective component upgrades and software changes. Line replaceable units, or black boxes, should be designed from the outset to readily accept enhanced microcircuitry and new programming. To support mature programs in this way, the organization needs to provide a robust and ongoing engineering support program for these systems. DoD should look for commercial processing and production efficiencies through Non-Developmental

Items (NDI), Commercial Off-the-Shelf (COTS) acquisitions, and use of common production facilities. We cannot realistically build full-up systems on a commercial or common production line. However, we can use common production facilities to capture economies of scale at the subsystem, component, and piece part level. For instance, we should consider commercial designs for a turbo-alternator on the M1 tank or the power plant and transmission subsystem for a new land vehicle. In general, DoD should evaluate those military requirements that are driving unique processes or production facilities and assess whether these requirements are worth the incremental cost.

A better leveraged industrial base reduces cost and acquisition cycle time. Given that everyone has access to the same commercial technology base, the military advantage will go to the nation who has the shortest cycle time to capture what is available commercially, get it incorporated in weapon systems, and get it fielded. Therefore, as discussed, to finance its strategic renewal by leveraging the national industrial base, DoD should:

1. Focus on improving the capability and extending the service life of existing platforms through technology insertion via cost effective component upgrades.
2. Eliminate, to the maximum extent practical, use of military specifications and standards and convert all requirements to performance specifications and/or commercial standards to facilitate dual-use.

Leverage the Global Industrial Base

The U.S. must also leverage the global industrial base. International cooperation in armaments development helps to strengthen the connective tissue between the U.S. and the nation's allies, increases the interoperability of equipment, and allows the U.S. and other nations to collectively afford that which they could not afford individually. The key to achieving the

strategic objectives of the JCS and the CINCs cost effectively is the synergy and leverage gained from the integration of skills and resources through joint and multi-national operations.

Broadening the cooperative base for defense by sharing the investment in highly capable systems that leverages the best technology available globally, will spread the cost of fixed investments, reduce risk, and lower unit costs. This type of cooperative non-competitive behavior is risk reducing and it is a component of the environmental shaping strategy. The behavior is important because it enhances regional stability by helping friendly nations protect themselves affordably without direct involvement of U.S. military forces.¹⁴

The focus on joint and multi-national operations, the need to minimize cost, and the requirement to share risk will drive collective modernization of forces.¹⁵ Therefore, DoD should place greater managerial emphasis on and employ technical approaches that leverage common weapon system platforms, multi-service joint programs, and multi-national cooperative efforts that proactively meet the critical needs of the warfighting CINCs. In developing and managing programs that meet the needs of the CINCs, DoD should not duplicate a technical or support function that is better performed by someone else. Rather, it should outsource those functions to lower cost and improve performance. Finally, the importance, sensitivity, and support of joint-service and multi-national cooperative programs will greatly facilitate stable multi-year contracting and funding. Multi-year contracts provide stable funding that decreases turmoil, lowers risk, cuts costs, and reduces the non-value added activities associated with the political machinations of the annual defense budget reconciliation. Therefore, as discussed, to finance its strategic renewal by leveraging the global industrial base, DoD should:

1. Minimize cost and share risk by using technical approaches and management techniques that facilitate collective modernization of forces via common weapon system

platforms, multi-service joint development programs, and multi-national cooperative development efforts.

2. Ensure multi-year planning, budgeting, and contracting for the research, development and acquisition (RDA) of programs to provide the necessary stability for multi-service and multi-national agreements.¹⁶

Privatize and Outsource Support Infrastructure and Business Services

The military can finance its strategic renewal by privatizing and outsourcing support infrastructure and business services. Many support functions currently performed by DoD could be performed privatized or outsourced. Privatization and outsourcing have consistently yielded savings of 20% or more. As shown in the following analysis, privatization of infrastructure and outsourcing of business services offer a potential savings of \$10B annually.¹⁷

Privatization and Outsourcing

<u>Privatization of Infrastructure</u>	Annual Cost(\$B)	Potential Savings(\$B)*
Depot Maintenance	\$12.00	\$2.40
Facility Operations	\$5.00	\$1.00
Intermediate Level Maintenance	\$2.00	\$0.40
Family Housing	\$3.50	\$0.70
Medical	<u>\$10.00</u>	<u>\$2.00</u>
Total=	\$32.50	\$6.50
<u>Outsource Business Services</u>		
Financial Management	\$2.10	\$0.42
Administrative Systems		
Civilian Personnel Management	\$0.80	\$0.16
Payroll	\$0.85	\$0.17
Mail and Printing	\$0.55	\$0.11
PCS Moves	\$1.00	\$0.20
Information Systems	\$1.00	\$0.20
Telecommunications Support	\$0.18	\$0.04
Institutional Training	<u>\$14.00</u>	<u>\$2.80</u>
Total=	\$20.48	\$4.10
Total Potential Savings=		<u>\$10.60</u>

**Potential 20% savings based on history.*

Fig. 12. Savings from Privatization and Outsourcing.

Team New Zealand

Team New Zealand, the America's Cup sailing team that defeated Team Dennis Connor five races to zero with overwhelming margins in each race, offers some insights on strategy, unforeseen threats from new entrants to the market, the importance of teaming, cycle time, and the pursuit of competitive advantage that is relevant to both business and the military. Historically, teams from large countries have leveraged their nations' manufacturing bases and technological resources to dominate the competition. So how did a team from a small country

such as New Zealand triumph in a sport driven by advanced technology? Team New Zealand gained a competitive advantage by reinventing the yacht design process. As in business and in the military, Team New Zealand needed to meet extremely demanding schedules, work within a constrained budget, and deliver superior performance. Unlike the larger America's Cup competitors, Team New Zealand did not have corporate sponsorship nor the competitive advantage that it offered to obtain ready access to expensive wind tunnels, towing tanks, or supercomputers. Instead, Team New Zealand acted asymmetrically to the existing market paradigm by using less expensive workstations to create and drive its own simulation-based process of design, analysis, test, feedback, and redesign. By locating its computer network at the team's sailing facility, they were able to tightly integrate the designers, testers and sailing crew in a cohesive team.

As many as several hundred simulation designs were analyzed each night. The next morning, they chose the two best for a component and had them manufactured in the machine shop next door, installed on two identical boats, and raced to test which performed better. With the aid of the simulation, they isolated the factors that helped the winning boat go faster and the losing boat to go slower. The designers, testers, and sailing crew worked side by side to perform about 10,000 simulated iterations over a two month period. By doing so they created a superior capability, affordably, and in less time than their competitors.

Roman Strategy

A review of the strategic situation facing Rome during the rule of Octavian reinforces the importance of strategy; lends support to the study's recommendations; reinforces recent past U.S. strategic military and geopolitical decisions; clarifies the need to understand competitive dynamics in a military sense, recognizes the need to anticipate and respond to the intent and

capabilities of our enemies, highlights the importance of the capability of being able to rapidly reinforce, and focuses on the necessity of being able to manage the environment based on knowledge obtained through a competitive advantage in information. Octavian, later to become Augustus Caesar, designed and implemented strategies to protect the dimensions of the economic and political world that had been established by Caesar and those who fought before him. The situation he faced was not all that different from that which is faced by the U.S. today.¹⁸

The first thing that Augustus Caesar did, and what the then current ruler Tiberius in 7 BC reinforced, was to withdraw to stable political and defensible military borders. The Roman Empire had moved as far into what is now Germany as the Elbe River. However, that area was neither defensible nor were the people who lived there ready to engage in a stable political environment with Rome. So, the Romans retreated to an area where the population was beginning to become integrated with Roman civilization. They moved back to a line encompassing a stretch from the Rhine River to the intersection of the Rhine with the Danube - a line which then went through what are now the Balkans to the Black Sea; then from the middle of the eastern Black Sea to the Caspian; and down the area of Mesopotamia; then over to Egypt; up Egypt along the African coast of the Mediterranean to what was the ancient remains of Carthage. It was the overt intent of Augustus and Tiberius to make a consolidation of the Empire militarily, politically, and economically to stabilize Rome's central position as the global leader of the times.¹⁹ First, the Romans wanted to establish strong client states, militarily able and willing to defend their borders. At a time when Caesar was fighting the inhabitants, it was clear that they could not be allowed to arm themselves. As they became steady members of the Roman empire, they were encouraged to put together forces and cooperate with the Roman forces of the day. In the same way, the U.S. has attempted to gain stable partners that can be

counted upon to defend their own borders, and in that defense, to be the outer defense of the U.S. The ongoing discussions of who to include in NATO are very reminiscent of the decisions of Augustus Caesar to limit the extent of alliances to politically reliable allies.²⁰ However, it can be argued that expansion of NATO makes the new borders less defensible than the old. Alternatively, expansion of NATO could also be considered a component of a European environmental shaping strategy.

Second, the the Romans wanted to ensure good economic cooperation between the newly conquered territories and with Rome itself. Rome stimulated the economy by buying extensively from their allies. This economic policy was not pure altruism for Rome. Very clearly the Roman merchants and the Roman citizens of that time emigrated from Rome to the new provinces, remaining as Roman citizens and capitalizing on the opportunities of this new trade. Today something quite similar is happening. The world has become a global economy. The U.S. is heavily invested in Europe, Asia, and Latin America and those countries are heavily invested in the U.S.

Third, the Romans wanted to establish an information rich environment which would allow a rapid response in case of military adversity. Very clearly the roads that were completed at the time of the Romans are still evident in the highways of France today. The only straight roads that go in one direction for long periods of time, except for the recently completed major auto routes, are the roads built by the Romans. None of the roads that were built by the Frenchmen of the Renaissance or the periods up until after World War II were as good as the roads built by the Roman soldiers two thousand years ago. The straightness of the roads allowed rapid movement of troops and supplies to respond to any military emergency. Rome also used the roads to move messengers back and forth from the Roman provinces to Rome itself and to

the headquarters of the other Roman military forces - a degree of communication far outstripping that of all of their adversaries.²¹

As discussed, a review of the strategic situation facing ancient Rome reinforces the importance of strategy; lends support to the study's recommendations; reinforces recent past U.S. strategic military and geopolitical decisions; and clarifies the need to understand factors that affect competitive advantage.

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¹⁶Ron Turner, "Recommendations of the Defense Acquisition Reform Working Group (ARWG)," Testimony to the Senate Armed Services and Governmental Affairs Joint Hearing on Federal Acquisition Policy, (March 16, 1994).

¹⁷Foster, 71.

¹⁸Dr. Walter Laberge, "The Geopolitical and Historical Parallels Between Rome and the U.S.," Briefing to the Senior Service College (SSC) in Austin, TX, (May 5, 1995).

¹⁹Ibid.

²⁰Ibid.

²¹Ibid

CHAPTER FIVE

CONCLUSIONS

General

The study concludes that an alternative approach to address national military strategy using concepts, tools, and ideas from business strategy is, in fact, viable. Further, the discussion provides insights on new ways to leverage these ideas. The study concludes that the essence of both military and business strategy is relating and aligning an organization to the forces influencing its environment. Further, the goal of strategy is to find a position where the organization can best defend itself against these forces or influence them in its favor.

The thesis concludes that U.S. defense planning for the twenty-first century is at a crossroads. The study finds that the development of optimum U.S. national military strategy is especially difficult because of the environmental forces at work and that the current mechanisms used to develop national military strategy may be inherently flawed in an environment of change and uncertainty. The study points out that current methods used in the development of military strategy may not be well suited to address long-term issues. Their relevance to a changing security environment is questionable. Current methods in the development of military strategy tend to ignore or at least de-emphasize the importance of hedging. Moreover, defense officials tend to focus disproportionately on the development of strategy as planning, programming, and resource allocation, rather than as ways to respond to, shape, preempt, and hedge against new emerging environments.

The study discusses the environmental forces that affect the U.S. military. These forces are characterized by geopolitical upheaval, diffuse threats, rapid technological change, globalization, weapons proliferation, limited resources, competing needs, and new missions. The study draws an analogy with the environmental forces that affect U.S. firms. These forces are intense business competition, new technology, product proliferation, emergence of new markets, changing customer preferences, and social and business related litigation and regulation. The study concludes that the forces that affect both the military and business, although manifested differently, are the same.

The study also concludes, both qualitatively and quantitatively, that many ideas in business strategy are relevant to the formulation of national military strategy. These ideas are relevant because the application of business strategy and strategic planning offers at least one imperfect way to cope with an environment of change and uncertainty.

The study further finds that not only are there are more symmetries than asymmetries in the elements of business and military strategy, but some of these ideas have already been shared. This observation leads to the conclusion that an alternative approach to address national military strategy using concepts, tools, and ideas from business strategy is viable, thereby, answering the primary thesis question. The study further concludes that a reinvigorated focus on strategy which leverages both competitive and noncompetitive concepts from business strategy may be especially effective.

The study also concludes that the development of strategy is a significant organizational process that relies heavily on the strength of senior level leadership to manage strategic change. It involves the art of being able to take a vision of what must be done, communicate it in a way that the intent is clearly understood, and then to be tough enough to ensure its execution over the long term.

The research suggests that the development of U.S. national military strategy could profit greatly from an approach that distinguishes among core, environmental, and hedging strategies. The study also concludes that business concepts such as defining the business, dealing with new competitors, entry and exit barriers, asymmetrical or indirect attack, and strategic renewal have special relevance to the development of U.S. national military strategy.

Finally, the study finds that to ensure twenty-first century military superiority, the U.S. must get to the future first. The research shows that formulating and implementing effective strategy requires: (1) an understanding how competition for the future is different; (2) a process for finding insight into tomorrow's opportunities; (3) an ability to energize the organization for a long and arduous journey toward the future; and (4) the capacity to outrun competitors and get to the future first without taking undue risks. The study recommends the U.S. should pursue a general strategy of differentiation with a cost advantage. Specifically, the thesis recommends the U.S. devise and implement a core strategy, an environmental shaping strategy, and a hedging strategy to allow the U.S. to deter and defeat any threat along the entire spectrum of conflict within acceptable risk while being optimized to respond to the specific type of enemy that we are most likely to face; deal with unforeseen threats, and facilitate opportunities to pursue non-competitive behavior that avoids conflict and creates wealth.

To achieve a differentiated advantage, the study concludes the U.S. should continue to leverage joint and multi-national operations and capabilities, high quality soldiers and training, and flexible technologically superior capabilities. To achieve a cost advantage, the U.S. should achieve economies and rebalance investments by altering our existing combat forces mix and by operating our supporting business practices in ways so as to generate the resources to fuel strategic renewal. To hedge, the U.S. should continue to maintain a credible offensive strategic nuclear capability, devise new methods to destroy weapons of mass destruction (WMD) and their

delivery systems with minimum collateral damage, implement strong offensive and defensive information warfare systems, develop a national and regional multi-tiered defensive system against ballistic and cruise missiles, and pursue a vigorous technology research and development effort. To shape the environment, the U.S. should employ strategic partnering with traditional allies and new states and enhance our existing National Security Strategy (NSS) of Engagement and Enlargement.

Topics for Further Study

1. What structures and processes should be changed in what way to improve the formulation of military strategy?
2. What approaches should be used to address Congress and other entities to affect these changes?
3. What other strategies could the U.S. use to hedge and shape future environments?
4. What is the effectiveness of existing strategies?
5. How should effectiveness be measured?
6. What is the true nature of risk and how should risk be represented in this context?
7. What are the newest emerging ideas in business strategy and what is their application to military strategy?
8. How can ideas in military strategy be applied to the formulation of business strategy?

Closing Thoughts

The study is important and timely. Individually, it forces an expanded mode of thinking in both time and scope. Further, the study shares many conclusions with the recently released U.S. Quadrennial Defense Review (QDR) which addressed many of the same issues. Obviously,

the decisions on these issues will affect the direction and relevance of the U.S. in global affairs
for decades to come.

APPENDIX A

MULTIPLE REGRESSION DATA

ROW	YEARS	QTRS	SALESQ-1	TREND	Q1	Q2	Q3	Q4	SALES Q	R&DEXP
1	1965	1	*	1	1	0	0	0	28025	1754
2	1965	2	28025	2	0	1	0	0	28455	1782
3	1965	3	28455	3	0	0	1	0	24249	1337
4	1965	4	24249	4	0	0	0	1	31612	1454
5	1966	1	31612	5	1	0	0	0	28987	1624
6	1966	2	28987	6	0	1	0	0	27743	1702
7	1966	3	27743	7	0	0	1	0	23918	1634
8	1966	4	23918	8	0	0	0	1	31854	1966
9	1967	1	31854	9	1	0	0	0	30045	2062
10	1967	2	30045	10	0	1	0	0	28055	1799
11	1967	3	28055	11	0	0	1	0	20591	1674
12	1967	4	20591	12	0	0	0	1	28446	1882
13	1968	1	28446	13	1	0	0	0	27036	1987
14	1968	2	27036	14	0	1	0	0	30104	2032
15	1968	3	30104	15	0	0	1	0	26412	1809
16	1968	4	26412	16	0	0	0	1	32641	1969
17	1969	1	32641	17	1	0	0	0	35032	2360
18	1969	2	35032	18	0	1	0	0	37010	2168
19	1969	3	37010	19	0	0	1	0	32549	2010
20	1969	4	32549	20	0	0	0	1	42012	1968
21	1970	1	42012	21	1	0	0	0	44249	2466
22	1970	2	44249	22	0	1	0	0	43747	2516
23	1970	3	43747	23	0	0	1	0	35354	2096
24	1970	4	35354	24	0	0	0	1	39718	1783
25	1971	1	39718	25	1	0	0	0	36084	2411
26	1971	2	36084	26	0	1	0	0	34329	2617
27	1971	3	34329	27	0	0	1	0	27939	1925
28	1971	4	27939	28	0	0	0	1	32556	2564
29	1972	1	32556	29	1	0	0	0	41189	2566
30	1972	2	41189	30	0	1	0	0	37980	2693
31	1972	3	37980	31	0	0	1	0	31036	2660
32	1972	4	31036	32	0	0	0	1	36306	2693
33	1973	1	36306	33	1	0	0	0	39290	2720
34	1973	2	39290	34	0	1	0	0	37919	2879
35	1973	3	37919	35	0	0	1	0	34581	2726
36	1973	4	34581	36	0	0	0	1	44793	2196
37	1974	1	44793	37	1	0	0	0	42586	2768
38	1974	2	42586	38	0	1	0	0	48649	2795
39	1974	3	48649	39	0	0	1	0	35352	3129
40	1974	4	35352	40	0	0	0	1	52847	3237
41	1975	1	52847	41	1	0	0	0	46942	3214

42	1975	2	46942	42	0	1	0	0	41219	3291
43	1975	3	41219	43	0	0	1	0	32633	3094
44	1975	4	32633	44	0	0	0	1	35052	2837
45	1976	1	35052	45	1	0	0	0	37847	2878
46	1976	2	37847	46	0	1	0	0	50719	2867
47	1976	3	50719	47	0	0	1	0	49613	2561
48	1976	4	49613	48	0	0	0	1	59941	2800
49	1977	1	59941	49	1	0	0	0	67725	2843
50	1977	2	67725	50	0	1	0	0	88263	3119
51	1977	3	88263	51	0	0	1	0	69676	3307
52	1977	4	69676	52	0	0	0	1	74969	3839
53	1978	1	74969	53	1	0	0	0	79709	4050
54	1978	2	79709	54	0	1	0	0	74837	4189
55	1978	3	74837	55	0	0	1	0	65163	4249
56	1978	4	65163	56	0	0	0	1	71838	4398
57	1979	1	71838	57	1	0	0	0	80756	5103
58	1979	2	80756	58	0	1	0	0	81549	5366
59	1979	3	81549	59	0	0	1	0	80027	5638
60	1979	4	80027	60	0	0	0	1	84897	6295
61	1980	1	84897	61	1	0	0	0	108816	6249
62	1980	2	108816	62	0	1	0	0	103862	6061
63	1980	3	103862	63	0	0	1	0	106789	6314
64	1980	4	106789	64	0	0	0	1	96957	6392

ROW	PEOPLE	R&DEXP-1	R&DEXP-2	R&DEXP-3	R&DEXP-4	R&DEXP-5	R&DEXP-6
1	486	*	*	*	*	*	*
2	506	1754	*	*	*	*	*
3	505	1782	1754	*	*	*	*
4	502	1337	1782	1754	*	*	*
5	507	1454	1337	1782	1754	*	*
6	550	1624	1454	1337	1782	1754	*
7	536	1702	1624	1454	1337	1782	1754
8	538	1634	1702	1624	1454	1337	1782
9	547	1966	1634	1702	1624	1454	1337
10	557	2062	1966	1634	1702	1624	1454
11	537	1799	2062	1966	1634	1702	1624
12	535	1674	1799	2062	1966	1634	1702
13	538	1882	1674	1799	2062	1966	1634
14	551	1987	1882	1674	1799	2062	1966
15	518	2032	1987	1882	1674	1799	2062
16	513	1809	2032	1987	1882	1674	1799
17	512	1969	1809	2032	1987	1882	1674
18	545	2360	1969	1809	2032	1987	1882
19	517	2168	2360	1969	1809	2032	1987
20	521	2010	2168	2360	1969	1809	2032
21	534	1968	2010	2168	2360	1969	1809
22	582	2466	1968	2010	2168	2360	1969
23	575	2516	2466	1968	2010	2168	2360
24	528	2096	2516	2466	1968	2010	2168
25	493	1783	2096	2516	2466	1968	2010
26	488	2411	1783	2096	2516	2466	1968
27	480	2617	2411	1783	2096	2516	2466
28	480	1925	2617	2411	1783	2096	2516
29	473	2564	1925	2617	2411	1783	2096
30	473	2566	2564	1925	2617	2411	1783
31	464	2693	2566	2564	1925	2617	2411
32	458	2660	2693	2566	2564	1925	2617
33	454	2693	2660	2693	2566	2564	1925
34	453	2720	2693	2660	2693	2566	2564
35	437	2879	2720	2693	2660	2693	2566
36	442	2726	2879	2720	2693	2660	2693
37	446	2196	2726	2879	2720	2693	2660
38	458	2768	2196	2726	2879	2720	2693
39	449	2795	2768	2196	2726	2879	2720
40	453	3129	2795	2768	2196	2726	2879
41	393	3237	3129	2795	2768	2196	2726
42	374	3214	3237	3129	2795	2768	2196
43	290	3291	3214	3237	3129	2795	2768
44	297	3094	3291	3214	3237	3129	2795
45	283	2837	3094	3291	3214	3237	3129
46	287	2878	2837	3094	3291	3214	3237
47	289	2867	2878	2837	3094	3291	3214
48	304	2561	2867	2878	2837	3094	3291
49	319	2800	2561	2867	2878	2837	3094
50	345	2843	2800	2561	2867	2878	2837
51	361	3119	2843	2800	2561	2867	2878
52	371	3307	3119	2843	2800	2561	2867
53	386	3839	3307	3119	2843	2800	2561
54	414	4050	3839	3307	3119	2843	2800
55	415	4189	4050	3839	3307	3119	2843
56	442	4249	4189	4050	3839	3307	3119

57	451	4398	4249	4189	4050	3839	3307
58	473	5103	4398	4249	4189	4050	3839
59	525	5366	5103	4398	4249	4189	4050
60	523	5638	5366	5103	4398	4249	4189
61	535	6295	5638	5366	5103	4398	4249
62	525	6249	6295	5638	5366	5103	4398
63	516	6061	6249	6295	5638	5366	5103
64	504	6314	6061	6249	6295	5638	5366

ROW	R&DEXP-7	R&DEXP-8	R&DEXP-9	R&DEX-10	R&DEX-11	R&DEX-12
1	*	*	*	*	*	*
2	*	*	*	*	*	*
3	*	*	*	*	*	*
4	*	*	*	*	*	*
5	*	*	*	*	*	*
6	*	*	*	*	*	*
7	*	*	*	*	*	*
8	1754	*	*	*	*	*
9	1782	1754	*	*	*	*
10	1337	1782	1754	*	*	*
11	1454	1337	1782	1754	*	*
12	1624	1454	1337	1782	1754	*
13	1702	1624	1454	1337	1782	1754
14	1634	1702	1624	1454	1337	1782
15	1966	1634	1702	1624	1454	1337
16	2062	1966	1634	1702	1624	1454
17	1799	2062	1966	1634	1702	1624
18	1674	1799	2062	1966	1634	1702
19	1882	1674	1799	2062	1966	1634
20	1987	1882	1674	1799	2062	1966
21	2032	1987	1882	1674	1799	2062
22	1809	2032	1987	1882	1674	1799
23	1969	1809	2032	1987	1882	1674
24	2360	1969	1809	2032	1987	1882
25	2168	2360	1969	1809	2032	1987
26	2010	2168	2360	1969	1809	2032
27	1968	2010	2168	2360	1969	1809
28	2466	1968	2010	2168	2360	1969
29	2516	2466	1968	2010	2168	2360
30	2096	2516	2466	1968	2010	2168
31	1783	2096	2516	2466	1968	2010
32	2411	1783	2096	2516	2466	1968
33	2617	2411	1783	2096	2516	2466
34	1925	2617	2411	1783	2096	2516
35	2564	1925	2617	2411	1783	2096
36	2566	2564	1925	2617	2411	1783
37	2693	2566	2564	1925	2617	2411
38	2660	2693	2566	2564	1925	2617
39	2693	2660	2693	2566	2564	1925
40	2720	2693	2660	2693	2566	2564
41	2879	2720	2693	2660	2693	2566
42	2726	2879	2720	2693	2660	2693
43	2196	2726	2879	2720	2693	2660
44	2768	2196	2726	2879	2720	2693
45	2795	2768	2196	2726	2879	2720
46	3129	2795	2768	2196	2726	2879
47	3237	3129	2795	2768	2196	2726
48	3214	3237	3129	2795	2768	2196
49	3291	3214	3237	3129	2795	2768
50	3094	3291	3214	3237	3129	2795
51	2837	3094	3291	3214	3237	3129
52	2878	2837	3094	3291	3214	3237
53	2867	2878	2837	3094	3291	3214
54	2561	2867	2878	2837	3094	3291
55	2800	2561	2867	2878	2837	3094
56	2843	2800	2561	2867	2878	2837

57	3119	2843	2800	2561	2867	2878
58	3307	3119	2843	2800	2561	2867
59	3839	3307	3119	2843	2800	2561
60	4050	3839	3307	3119	2843	2800
61	4189	4050	3839	3307	3119	2843
62	4249	4189	4050	3839	3307	3119
63	4398	4249	4189	4050	3839	3307
64	5103	4398	4249	4189	4050	3839

APPENDIX B

MULTIPLE REGRESSION MODEL (MRM)

1. Best Regression Equation using Stepwise Selection Technique.

MTB > Stepwise 'SALES Q' 'SALESQ-1'-'Q4' 'R&DEXP'-'R&DEX-12';
SUBC> FEnter 4.0;
SUBC> FRemove 4.0.

STEPWISE REGRESSION OF SALES Q ON 20 PREDICTORS, WITH N = 52
N(CASES WITH MISSING OBS.) = 12 N(ALL CASES) = 64

<u>STEP</u>	<u>1</u>	<u>2</u>	<u>3</u>
CONSTANT	3178	4809	-3153

SALESQ-1	0.964	0.982	0.803
T-RATIO	18.93	22.76	11.22

Q3	-10191	-8953
T-RATIO	-4.61	-4.28

R&DEXP-7	6.3
T-RATIO	3.00

S 8149 6875 6374

R-SQ 87.76 91.46 92.81

MORE? (YES, NO, SUBCOMMAND, OR HELP)

SUBC> YES

NO VARIABLES ENTERED OR REMOVED

2. Multiple Regression of Best Apparent Variables from Stepwise Selection.

MTB > Name c33 = 'SRES3' c34 = 'FITS3' c35 = 'RESI3'
MTB > Regress 'SALES Q' 3 'SALESQ-1' 'Q3' 'R&DEXP-7' 'SRES3' 'FITS3';
SUBC> Residuals 'RESI3';
SUBC> DW.

The regression equation is

$$\text{SALES Q} = -2763 + 0.795 \text{ SALESQ-1} - 8948 \text{ Q3} + 6.31 \text{ R\&DEXP-7}$$

57 cases used 7 cases contain missing values

Predictor	Coef	Stdev	t-ratio	p
Constant	-2763	2996	-0.92	0.361
SALESQ-1	0.79509	0.06834	11.63	0.000
Q3	-8948	1941	-4.61	0.000
R\&DEXP-7	6.314	1.927	3.28	0.002

s = 6159 R-sq = 93.3% R-sq(adj) = 92.9%

Analysis of Variance

SOURCE	DF	SS	MS	F	p
Regression	3	27966312448	9322103808	245.77	0.000
Error	53	2010310400	37930384		
Total	56	29976623104			

SOURCE	DF	SEQ SS
SALESQ-1	1	26472085504
Q3	1	1087173120
R\&DEXP-7	1	407054048

Unusual Observations

Obs.	SALESQ-1	SALES Q	Fit	Stdev.Fit	Residual	St.Resid
50	67725	88263	70621	1203	17642	2.92R
61	84897	108816	91188	1902	17628	3.01R
64	106789	96957	114366	2764	-17409	-3.16R

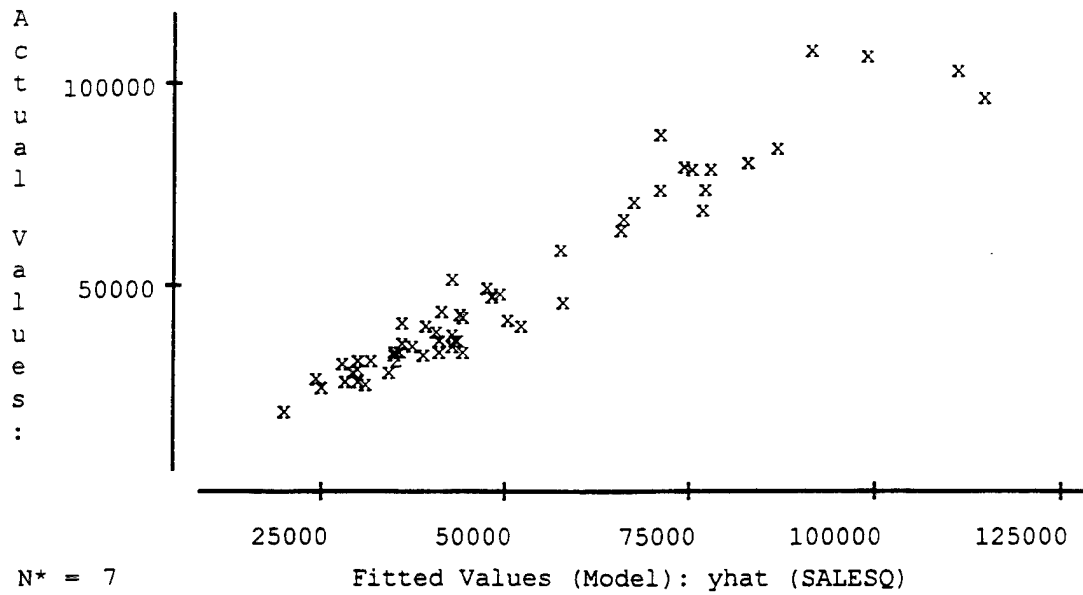
R denotes an obs. with a large st. resid.

Durbin-Watson statistic = 2.31

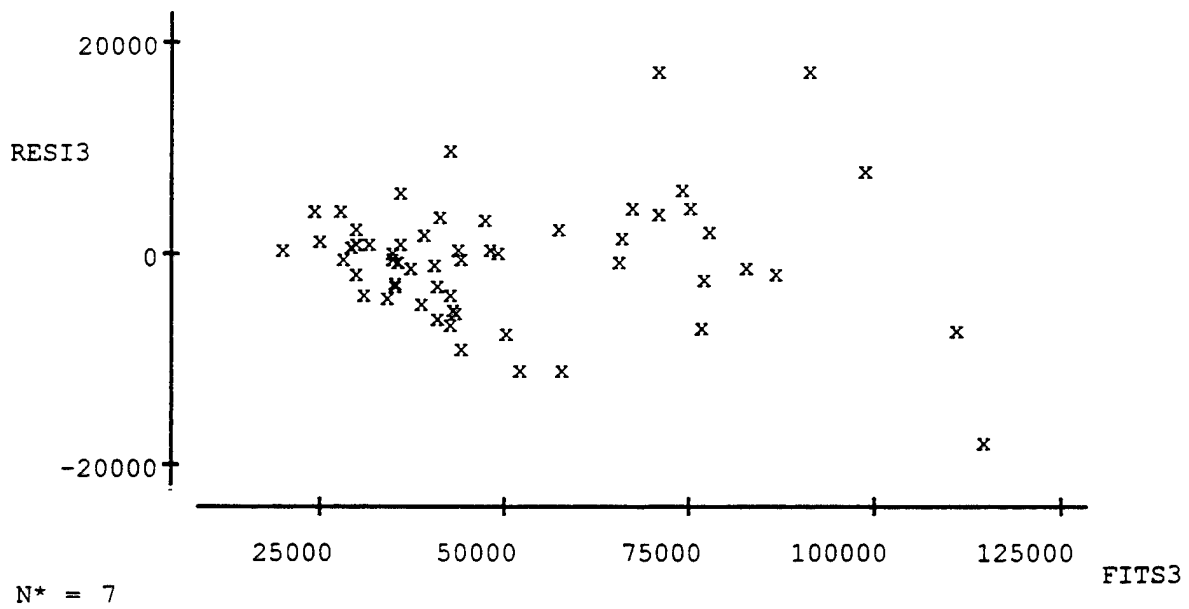
3. Diagnostic Checks of Model.

a. Check for Linearity.

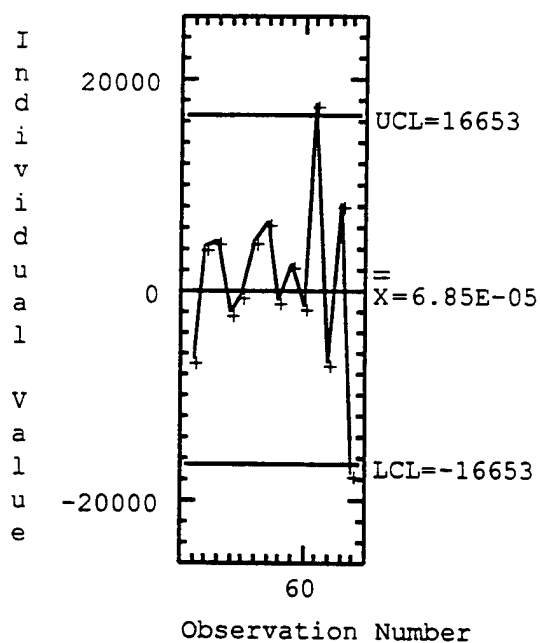
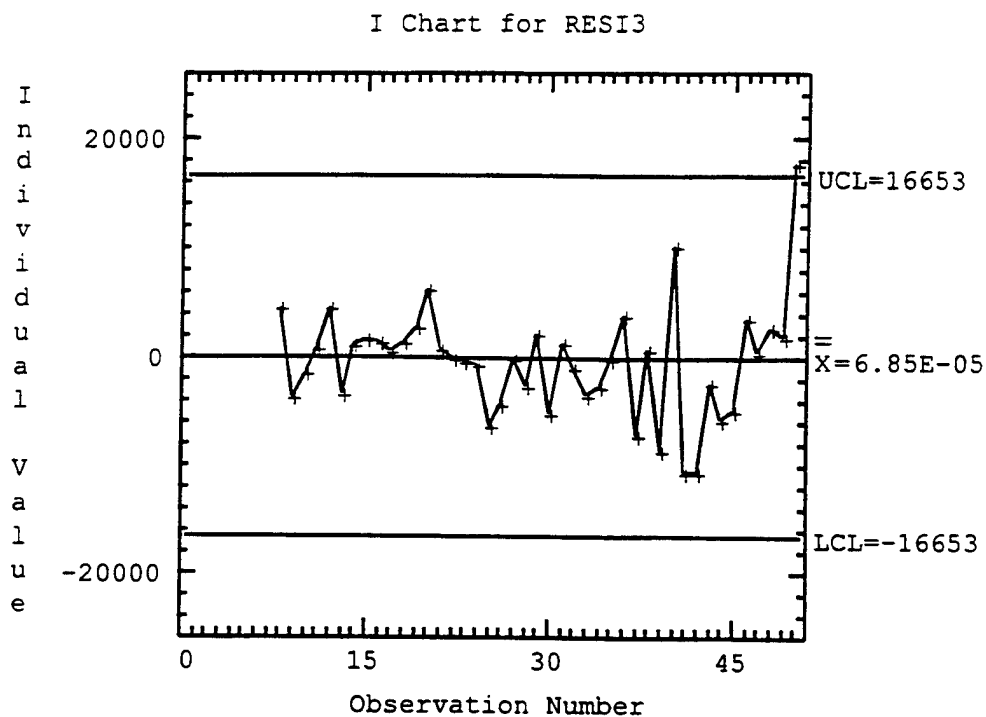
Scatter Plot of Actual and Fitted Values



b. Check to Ensure that the Residuals are "Patternless."



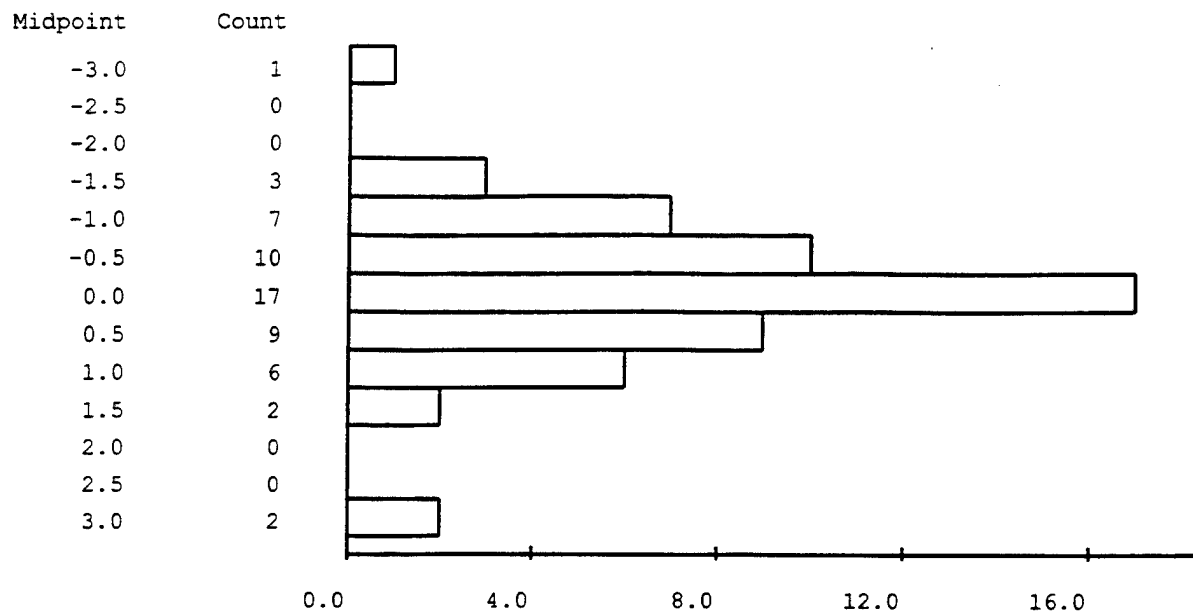
c. Time Series Plot of Residuals to Ensure that they are Independent and Identically Distributed (iid Behavior).



NOTE- The time series plot shows a few unusual observations that exceed $\pm 3\sigma$, some behavior that appears to be meandering, and other behavior that looks like negative autocorrelation.

d. Histogram of the Standardized Residuals.

SRES3 N = 57 N* = 7



NOTE-The histogram appears bell-shaped and normal. However, the distribution seems "tail-heavy".

d. Runs Test.

MTB > runs c36

C36

K = 0.0001

THE OBSERVED NO. OF RUNS = 28

THE EXPECTED NO. OF RUNS = 29.4912

28 OBSERVATIONS ABOVE K 29 BELOW

THE TEST IS SIGNIFICANT AT 0.6902

CANNOT REJECT AT ALPHA = 0.05

NOTE-We cannot reject our hypothesis of independence.

4. Predictions Using Model.

```
MTB > Name c40 = 'SRES2' c41 = 'FITS2' c42 = 'RESI2'
MTB > Regress 'SALES Q' 3 'SALESQ-1' 'Q3' 'R&DEXP-7' 'SRES2' 'FITS2';
SUBC> Residuals 'RESI2';
SUBC> DW;
SUBC> Predict 106789 0 5103;
SUBC> Predict 106789 0 1480.
```

The regression equation is

$\text{SALES Q} = -2763 + 0.795 \text{ SALESQ-1} - 8948 \text{ Q3} + 6.31 \text{ R\&DEXP-7}$

57 cases used 7 cases contain missing values

Predictor	Coef	Stdev	t-ratio	p
Constant	-2763	2996	-0.92	0.361
SALESQ-1	0.79509	0.06834	11.63	0.000
Q3	-8948	1941	-4.61	0.000
R&DEXP-7	6.314	1.927	3.28	0.002

s = 6159 R-sq = 93.3% R-sq(adj) = 92.9%

Analysis of Variance

SOURCE	DF	SS	MS	F	p
Regression	3	27966312448	9322103808	245.77	0.000
Error	53	2010310400	37930384		
Total	56	29976623104			

SOURCE	DF	SEQ SS
SALESQ-1	1	26472085504
Q3	1	1087173120
R&DEXP-7	1	407054048

Unusual Observations

Obs.	SALESQ-1	SALES Q	Fit	Stdev.Fit	Residual	St.Resid
50	67725	88263	70621	1203	17642	2.92R
61	84897	108816	91188	1902	17628	3.01R
64	106789	96957	114366	2764	-17409	-3.16R

R denotes an obs. with a large st. resid.

Durbin-Watson statistic = 2.31

Fit	Stdev.Fit	95% C.I.	95% P.I.
114366	2764	(108820, 119911)	(100823, 127909)

Fit	Stdev.Fit	95% C.I.	95% P.I.
91489	6024	(79405, 103574)	(74206, 108773)

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