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**THE EVOLUTION IN MILITARY AFFAIRS:
SHAPING THE FUTURE U.S. ARMED FORCES**

Douglas C. Lovelace, Jr.

June 16, 1997

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FOREWORD

Since the fall of the Berlin wall in 1989, the U.S. armed forces have changed significantly to accommodate what has become known as the "post-Cold War era." Not only has the U.S. military establishment become smaller, but, as the Chairman of the Joint Chiefs of Staff's *Joint Vision 2010* suggests, the armed forces also are becoming more lethal. In developing its post-Cold War forces, the Department of Defense is crafting a "system of systems" which promises unprecedented synergy in fighting and winning the nation's wars.

In this study, Professor Douglas Lovelace articulates the exigent need to begin preparing the U.S. armed forces for the international security environment which will succeed the post-Cold War era. He defines national security interests, describes the future international security environment, identifies derivative future national security objectives and strategic concepts, and discerns the military capabilities that will be required in the early 21st century.

Professor Lovelace neither proposes nor allows for a "revolution in military affairs," but contends that the U.S. military necessarily must evolve into a 21st century force. He considers the force capabilities suggested by *Joint Vision 2010* as a necessary step in this evolutionary process but carries the evolution further into the 21st century. While the process he foresees is evolutionary, the nature of the armed forces, if they come to fruition, would be distinctly different in roles, structure, doctrine, and operational employment concepts than those we know today. To be sure, his conclusions and recommendations ironically will seem revolutionary to many, despite their derivation from identifiable trends in the international security environment.

The Strategic Studies Institute is pleased to offer this study as a contribution to on-going efforts to define the armed forces the United States will require in the 21st century.

RICHARD H. WITHERSPOON
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BIOGRAPHICAL SKETCH OF THE AUTHOR

DOUGLAS C. LOVELACE, JR., joined the Strategic Studies Institute in 1994 upon his retirement from the U.S. Army. His military career included a combat tour in the Republic of Vietnam and a variety of command and staff assignments. While serving in the Joint Staff's Plans, Concepts, and Assessments Division and Conventional War Plans Division, he collaborated in the development of strategic documents including the National Military Strategy, Defense Planning Guidance, Contingency Planning Guidance, Joint Military Net Assessment, NSD 74, PDD 25, and others. He contributed to and coordinated Joint Staff efforts to produce *The Conduct of the Persian Gulf War*, the official Department of Defense report on Operations Desert Shield and Desert Storm. He also served as Director of Military Requirements and Capabilities at the U.S. Army War College. He holds a M.S. in business and is a graduate of the U.S. Army Command and Staff College and the National War College. His most recent SSI publication is *Unification of the United States Armed Forces: Implementing the 1986 Department of Defense Reorganization Act*.

SUMMARY

In determining the armed forces the United States will require in the future, the challenge for the military strategist is to identify the near-term actions which must be taken to ensure the right military capabilities are available when needed. To do so, the strategist must determine the nation's future interests, identify and rank the most significant and likely future threats and opportunities associated with those interests, and discern the future military capabilities the nation will require to accommodate the future security environment. Such planning is fraught with difficulty. The specifics of U.S. future interests are nearly as uncertain as future threats and opportunities. This compounded ambiguity coupled with political pressures to defer resolution of long-term issues poses substantial challenges to strategic planners.

Nonetheless, this monograph provides a military capability analysis that features a simplified approach to defining and weighing future national security interests and objectives. The study employs a three-tier model of the future international security environment to help identify future threats and opportunities and suggest future national security strategic concepts and their military components. In doing so, it describes the military capabilities necessary to effect the concepts.

The study then reviews the Chairman of the Joint Chiefs of Staff's *Joint Vision 2010* to identify the fundamental military capabilities it denotes. By comparing *Joint Vision 2010* capabilities to those identified by the three-tier assessment, the study illuminates the different or additional U.S. military capabilities that will be required as the international security environment emerges from the post-Cold War era.

Although the analysis necessarily requires some speculation about future national security interests, threats, and opportunities, it seeks to avoid the infirmities in credibility and relevancy that frequently befall futuristic strategic assessments. The analysis demonstrates that for the most part the contours of the early 21st century international security environment are fairly discernible today, as is the domestic context within which the United States will frame its national security interests and strategy. Additionally, the technological opportunities and limitations regarding force design and the potential capabilities of the early 21st century U.S. military are equally visible. Clearly, extraordinary technological and geopolitical surprises could obviate the analysis presented. That eventuality, however, need not inhibit timely force planning based on what is currently foreseeable.

A comparison of the three-tier assessment to the tenets of

Joint Vision 2010 clearly shows that the force capabilities suggested by the Chairman's vision are appropriate and necessary for the post-Cold War period, and many will apply well into the 21st century. It is equally clear, however, that as the international security environment emerges from the post-Cold War period, the U.S. armed forces must continue to evolve to serve better the needs of the nation. The assessment, therefore, both confirms the continued relevance of many *Joint Vision 2010* force capabilities and suggests several needed force modifications beyond those indicated by the Chairman's vision. Key actions suggested by the report include the following:

Recommendations.

- DoD should continue to modernize, refine, and reduce the *Joint Vision 2010* force to that necessary to provide a timely asymmetrical response hedge against military threats up to and including large-scale regional aggression.

- The United States must develop a global intelligence system different from but more comprehensive than its Cold War predecessor. The new system must be able to give relevance and meaning to the abundant information that will be available in the 21st century, effectively support security environment shaping activities, expose potential adversary intentions, and increase strategic warning.

- A force of small, strategically agile, and easily aggregated multi-mission capable units equipped with multi-role systems should be developed and added to the Active Component to provide a balanced force capable of efficiently promoting as well as defending U.S. interests in a variety of situations within all three tiers.

- Except in areas where major threats to fundamental U.S. interests are actual and imminent, residual Cold War forward stationed forces should be replaced by smaller but more numerous forward deployments of forces engaged in a carefully orchestrated pattern of preventive defense activities.

- DoD should be assigned responsibility for protecting key U.S. information systems from foreign attack and should develop comprehensive strategies and capabilities for defensive and offensive information warfare.

- The United States should supplement strategic nuclear deterrence with common strategic and theater defenses against weapons of mass destruction (WMD).

- The United States, in concert with other nations, should develop a multidimensional strategy and commensurate capabilities

to defeat terrorists armed with WMD. The President should provide clear lines of authority and responsibility for combatting WMD terrorism among DoD and other government agencies.

- The President should view international organized crime as a form of terrorism which threatens U.S. interests and bring to bear all of the instruments of national power to defeat it.

- As information capabilities, defense industry agility, and training innovations permit, much of DoD's symmetrical heavy combat forces should be transferred from the Active Component to the Reserve Components.

- DoD should involve the defense industrial base in planning for future military capabilities to the extent necessary to ensure DoD can take full advantage of the industry's increasing agility.

- Technology must be exploited not only to increase force lethality in combat but also to improve the armed forces' abilities to conduct operations other than war, prevent conflicts from emerging, and otherwise shape the international security environment at lower risks and costs.

- U.S. technology must be shared with allies and potential coalition partners to the extent necessary to ensure adequate military force interoperability.

- DoD should improve its technical capabilities to detect, locate, and neutralize WMD.

- DoD should begin now to develop leaders to become strategic artists skilled in the synergistic application of all the instruments of national power in an information-rich, highly complex, international security environment.

- The United States should not act as the surety of First Tier states for unfettered international commerce but should be a proportional participant in collective efforts to that end.

THE EVOLUTION IN MILITARY AFFAIRS: SHAPING THE FUTURE U.S. ARMED FORCES

INTRODUCTION

The transitory nature of the international security environment that followed the collapse of Soviet communism has left many U.S. national security strategists in a quandary concerning the type of armed forces the nation will require in the future. While pondering that question, strategists have engineered significant modifications of the U.S. Cold War military, making it more suitable for what has been called the "post-Cold War era." But that rearward-looking, indeterminate descriptor of an international security environment cannot be perpetuated indefinitely. Strategists must look forward to the 21st century and employ a concept for the future international security environment that can guide military force development decisions. To that end, this monograph proposes a useful construct for viewing the national security challenges and opportunities of the 21st century. Using that template of the future, the study describes how the U.S. armed forces must continue to evolve if they are to be relevant to the international security environment that succeeds the post-Cold War era.

Identifying Required Military Capabilities.

The rational approach to defining the armed forces required by a nation is a three-part process: 1) determining national security interests and objectives in light of the future geostrategic environment, 2) designing strategic concepts for furthering the interests through accomplishment of the objectives, and 3) identifying the military capabilities required to help implement the concepts. From the broad national security strategic concepts, the military strategist distills and refines military concepts which best integrate the military with the other instruments of national power.¹ In doing so, the military strategist conceives the military capabilities needed to support the national security strategy.

A wide range of factors helps shape the U.S. armed forces. Some are domestic and include political goals, social structure and culture, ethical climate, and level of technological development. Others are external and derive from the security environment in which the U.S. military must operate. The external factors that determine the potential applications of military power are often difficult to identify and assess. Nevertheless, they are essential determinants of the type of armed forces the nation will require.

In the 21st century, the United States will face multiple sources of armed conflict which will place diverse demands on scarce national security resources. Additionally, there will be many opportunities to promote U.S. interests through the application of the military instrument of national power. Strategic leaders must rank-order potential types of conflict or opportunities according to the risks they pose and the gains they promise, and according to the likelihood that they will develop. The process of identifying and establishing priorities for threats and opportunities is central to building an effective national security strategy.

The challenge for the military strategist is to identify the near-term actions which must be taken to ensure the desired military capability is available when needed. To do so, the strategist must determine the nation's future interests and objectives, identify and rank the most significant and likely future threats and opportunities associated with those interests, and discern the future military capabilities the nation will require. Such planning is fraught with difficulty. The specifics of U.S. future national security objectives are nearly as uncertain as future threats and opportunities. This compounded ambiguity coupled with political pressures to defer resolution of long-term issues make strategic planning difficult. Nonetheless, if military capability planning is based only on present or imminent threats and opportunities, the odds that the nation will have relevant forces in the future can be no better than the chances that objectives, threats, and opportunities will remain static.

A Simplified Analytical Approach. The military capability analysis provided in this monograph begins with a simplified approach to defining and weighing future national security interests and objectives. Next, it employs a three-tier model of the international security environment to help identify future threats and opportunities, suggests future national security strategic concepts and their military components, and describes the military capabilities necessary to effect the concepts. The study then reviews the Chairman of the Joint Chiefs of Staff's (CJCS) *Joint Vision 2010* to identify the fundamental military capabilities it denotes. By comparing *Joint Vision 2010* capabilities to those identified by the three-tier assessment, the study illuminates the different or additional U.S. military capabilities that will be required as the international security environment emerges from the post-Cold War era.

Necessarily, the analysis requires some speculation about future national security interests, threats, and opportunities. However, to avoid the credibility and relevancy infirmities that frequently befall futuristic strategic assessments,² the study limits the forecast horizon to about 20 years—the time it takes

to conceive of and field genuinely new force capabilities. It would not be useful to select a shorter time frame since the key decisions necessary to shape shorter range forces already have been made for the most part.³ It is not necessary to attempt to forecast beyond 20 years because the decisions which will begin the development of those longer range military capabilities are not yet due. The time frame selected for the projections contained in this study, therefore, establishes a practical relationship between the assessment provided and the needs of contemporary decisionmakers.

Additionally, seemingly conservative estimates of change are employed because historically, with some notable exceptions, change has not been as rapid as futurists have predicted. For example, some may recall the 1950s' forecast of the automated, robotic family kitchen of the 1970s. In the 1960s, respected authorities predicted that planetary landings, establishment of a permanent moon base, banning of private passenger vehicles from city cores, and synthetic creation of primitive life all would take place in the 1980s.⁴ Likewise, the 1984 we lived through contrasted sharply with that envisioned by Orwell.⁵ Moreover, national level militaries are inherently conservative organizations.⁶ It should come as no surprise, therefore, that the contemporary instruments of warfare bear a striking resemblance to those of 30 years ago. The jets, tanks, helicopters, and ships of today are certainly improved but still are the same basic types of systems and perform pretty much the same functions as those used three decades ago.

This study, therefore, does not speculate about remotely possible technological advances, radical changes in the international security environment, or sea changes in American values and interests. Such intellectual exercises are useful for developing alternative conceptual bases for longer term future national security environments but do not directly relate to current decisions concerning the allocation of defense resources and efforts. Instead, this study focuses on the *probable* and *identifiable* factors that will shape the U.S. armed forces of the early 21st century, because those considerations are most likely to influence contemporary decisionmakers.

Evolution vice Revolution. The analysis proceeds from the assumption that the Department of Defense (DoD) will not and cannot implement truly revolutionary change—that change within DoD, perforce, must be evolutionary. This assumption appears valid for two reasons. First, DoD has ongoing national security responsibilities that preclude it from embarking upon a period of revolutionary restructuring that would significantly diminish its current effectiveness. Second, DoD's internal bureaucracy and the external bureaucracies and political forces with which it must contend create strong inertia which restrains DoD from radical

metamorphosis. The department, therefore, must effect change in an incremental or evolutionary manner. This is not to suggest that DoD cannot change to accommodate future security environments, but only that DoD must employ an evolutionary process of change far enough in advance to assure the future relevance of U.S. armed forces. A planning horizon of 20 years is sufficient to guide DoD through structured but real change sufficient to protect and promote its 21st century national security interests.

National Security Interests, Objectives, and Strategy.

The United States will continue to distill the missions for its armed forces from analyses of national interests. The national goals the United States will seek in the future will continue to be derived from the basic constitutional purposes of the national government. Efforts to provide for the common defense and promote the general welfare will continue to define U.S. national security interests well into the coming millennium.⁷ Understandably, during the Cold War, perceived threats to U.S. security led to national security strategies which emphasized providing for the common defense, but offered few concepts for actively promoting the general welfare. As the nation moves farther beyond the Cold War period, however, emphasis should be adjusted to yield national security strategies that take a more balanced approach toward pursuing the two basic national security goals.⁸

Fundamental National Security Interests. For the 21st century, the two overarching national goals can be restated as two enduring fundamental national interests: the protection of America and Americans at home and abroad, and the promotion of American economic prosperity. The first interest includes protection of the American population, territory, property, institutions, and values from all manner of attack, direct or indirect. The second interest is fundamental not only because its pursuit makes possible improved quality of life for Americans, but also because it enables promotion of the first interest. The second fundamental national interest includes ensuring that the United States continually increases the benefits it derives from the global economy. This interest can be furthered by assuring that the United States maintains a stable share of an expanding global economy or by increasing the U.S. share of a stable global economy. From this pair of fundamental interests, all U.S. national security objectives will continue to derive.

Interest Categories. Analysts continue to debate the status of "interests" by using descriptors such as "vital," "important," "peripheral," "major," "humanitarian," or the like.⁹ Once they have placed a security concern into an interest category, they

debate whether the interest should be pursued, given current exigencies. Interests considered vital are always pursued; however, the need to act on lower level interests often is not so clear.¹⁰ For example, after declaring continued access to Middle East oil vital to U.S. economic prosperity and security, the United States altered its strategy to promote this interest.¹¹ On the other hand, the largely humanitarian concern over the carnage in the former Yugoslavia could not be categorized neatly as a vital interest, so the United States eschewed direct participation by American ground forces in efforts to bring peace to the war-torn region. Ground forces were not committed until U.S. leaders became convinced that the conflict threatened the vitality of the NATO Alliance.¹²

Debate about whether interests are vital or of some inferior importance tends to confuse the issues.¹³ Clearer and more timely policies would result from the maxim that national objectives will be pursued only to the extent that the costs of doing so will not exceed the expected contributions to advancing the two fundamental national interests. Thus, U.S. participation in efforts to restore peace to Bosnia may be warranted if the costs of intervention are outweighed by the benefits. In that situation, potential contributions to furthering the two fundamental national interests included the protection of the moral and ethical beliefs of the American people who were offended by the carnage, the enhancement of national security which may indirectly result from stability in the region, and the long-term benefits of sustaining the NATO Alliance.

Each situation, therefore, must be weighed according to its particular merits given the extant international security environment. Establishing categories of interests in advance, and, when a crisis occurs, trying to place a threatened interest into a category to justify a decision to intervene or not, virtually guarantees debate over which category of interest should apply. If the interest cannot clearly be placed in the vital category, but there is political desire to intervene anyway, the debate can become tedious and even counterproductive. Although intended to simplify political decisions, the categories of interests methodology often has the opposite effect.¹⁴ This study, therefore, does not employ the categories of interests model. Instead, the assessment is based simply on the potential contributions that reactive and proactive military operations would make to furthering the two fundamental national security interests.

Priority of Objectives. The United States, like any other nation, must wisely manage the finite resources it brings to bear in pursuit of its national interests. In doing so, it must implement a process that ensures optimal protection and promotion of its interests, given available resources. This requires the

identification and rank-ordering of national security objectives based on their relative contributions to the two fundamental national interests. This initial priority, although constituting a rough hierarchy of objectives, is not a sufficient basis for a national security strategy. A further analytical step must be taken; the potential risks and costs related to the objectives also must be considered. Both parts of the analysis must be performed if the United States is rationally to determine which national security objectives will figure prominently in shaping the contours of its future national security strategy.

Analogous to Maslow's hierarchy of needs,¹⁵ the attention given to pursuing the various national security objectives, as initially ranked, will depend on the extent to which their underlying national interests are projected to be threatened. For example, an initially high-ranking objective such as to defend the continental United States from land invasion would not figure prominently in a national security strategy that allows for no concomitant threat. For a national security objective to be reflected in a national security strategy it must both contribute to the protection and promotion of fundamental national interests and be relevant to the international security environment.

Additionally, a national security objective may be derived from a national interest for which there is no significant projected threat if there will be an opportunity to further the interest to an extent which outweighs the cost of doing so. Whether countering potential threats or taking advantage of important opportunities, the costs of pursuing an objective must not exceed its expected contribution to the nation's fundamental interests. Still, when this simple two-step methodology is applied within the context of a global community of nations which features both convergence and wide divergence of national pursuits, the number of strategic variables rapidly can become unmanageable. Consequently, a system for simplifying and classifying the international security environment is required to facilitate defining the threats and opportunities which will guide the establishment of strategic priorities and the identification of required military capabilities.

A Tripartite International Security Environment.

DoD must employ a coherent process to predict the future if it is to establish a sound basis for anticipating and preparing to deal with 21st century national security problems and opportunities. As the world moves further beyond the Cold War, emerging trends and foreseeable conditions strongly suggest that the future international security environment can be described as one featuring three tiers, with each tier potentially calling for quite different applications of military power.¹⁶ The three-tier

international security environment construct facilitates identification of threats and opportunities, development of strategic concepts for addressing them, and definition of the military capabilities that will be required to effect the concepts. Moreover, such a framework for analysis permits formulation and clear articulation of useful advice to assist key leaders in making resource allocation decisions.

Each of the three tiers will feature distinct dominant characteristics, although there will be some overlapping similarities among some states of different tiers. Generally, the tiers will view the international security system differently, experience different domestic pressures, focus on different forms of competition and conflict, and configure their military forces accordingly.

First Tier. The First Tier will be characterized by stability, prosperity, and multidimensional integration. Its economies increasingly will be defined by the creation, management, and manipulation of information rather than by traditional heavy industry. Governments will become increasingly attentive to the needs of business. Growing economic interdependence and cultural homogeneity will create stronger links among First Tier states, diluting national interests, boundaries, and sovereignty. First Tier national governments will submit to an ever-growing number of international rules and democracy will be universal.

For First Tier states, the use of force will not always be viewed as a measure of last resort, but there will be intense pressure to lower the risks of military operations and to conduct them inexpensively. Security strategies will stress conflict prevention, but military strategies will be less defensively oriented and will feature many offensive or proactive subcomponents. A collective view of national security will prevail that will center on the preservation of unfettered commercial intercourse and national enrichment through unimpeded economic growth.

First Tier armed forces will be small in terms of the number of people involved, but will make extensive use of technology.¹⁷ In most cases, close-in military operations conducted by First Tier armed forces will be along the lines of disaster relief, humanitarian assistance, nation building, peacekeeping, military-to-military cooperative contacts, and the like.

Second Tier. The Second Tier will be composed of what are today known as "newly industrializing countries" and the more advanced states of the former Soviet bloc. Traditional industrial production will remain the tier's economic bedrock. The nation-state will remain the central political and economic institution.

The most intense political debates within the Second Tier will pit those who seek greater integration into the First Tier-dominated world culture and economy against those who oppose it and, instead, favor economic nationalism and cultural particularism.¹⁸

Within the Second Tier, there will violent shifts to and from democracy. Sovereignty will be jealously guarded by Second Tier leaders. Their national security and military strategies will have internal as well as external components. Internally, their militaries will be used to guarantee the survival of the government. Externally, Second Tier militaries will be employed to protect and further national interests, often at the expense of neighboring states.¹⁹ The armed forces of Second Tier states, therefore, will remain focused on war in the traditional, conventional sense with large land-force formations and other separate services defined by the medium in which they operate.

Because Second Tier states will have a higher tolerance for casualties, their militaries generally will not invest in expensive technology for protecting their forces. Instead, they will acquire selected technologies for use in coercive roles and will take advantage of white and black arms markets and commercially available technologies adaptable for military use. Some Second Tier states, consequently, will develop or otherwise acquire limited numbers of state-of-the-art weapons systems. In contrast to most First Tier armed forces, Second Tier militaries, because of their higher tolerance for casualties and limited use of high-technology systems, will be more disposed to engaging in sustained, costly, and intense land operations or campaigns.

The overt use of weapons of mass destruction (WMD) by a Second Tier state will become more likely. Even if WMD are not actually used, they will remain coveted political weapons for providing the ultimate guarantee of national survival, threatening or coercing adversaries, facilitating aggression with impunity, and deterring First Tier military intervention in Second Tier affairs. If use should occur, and it is not followed by severe international condemnation, punishment, and political backlash, acquisition of WMD will become even more ardently pursued and the threshold for their use will be correspondingly lowered.

Second Tier militaries will have regional power projection capabilities that may be used against each other or to oppose regional intervention by nonregional actors. Second Tier states, however, will pose no conventional global threat. However, they will likely pose global threats through missiles armed with WMD and through the strategic projection of state-sponsored terrorism.²⁰

Third Tier. The Third Tier will feature a mosaic of economic stagnation, ungovernability, and violence. Parts of the Third Tier will remain linked to the global economy through the extraction and export of primary products and the import of manufactured goods and foreign aid, but this will affect only a small portion of the population.²¹ Many Third Tier states will experience recurrent bouts of ungovernability. Outright anarchy will be common, and many states will fragment. Democracy will be attempted but will frequently fail.

Violence in the Third Tier will be a routine part of daily life for many people. Ethical constructs like "just war" or collateral casualty aversion will have little meaning. Many Third Tier states, therefore, will ignore international laws of armed conflict.

Third Tier armed forces largely will take the form of armed gangs, militias, the personal armies of warlords, and terrorist groups. The Third Tier will have little indigenous military production, so its armed forces will have very limited ability to wage sustained, combined-arms operations.²² The acquisition of material or loot is likely to be the preeminent objective of Third Tier military operations, and, as a result, the Third Tier will provide safe harbor for organized criminal elements.

Terrorism will be the only significant form of power projection available within the Third Tier. Additionally, Third Tier states will provide proxy terrorists and terrorist preparation sites for Second Tier states who want to establish layers of cover for their acts of terror.²³ Because the nature of Third Tier life will suppress ethical inhibitions on the use of violence, states or warlords will have no compunction about using terrorism, and will view it as a valid asymmetrical strategy for combatting First and Second Tier states.

Tier Comparison. Generally, high-tech First Tier militaries will be able to defeat the large and somewhat lower-tech forces of Second Tier states, but will find that casualty aversion and the difficulty of sustaining popular and political support for lengthy operations will be important constraining factors. Similarly, First Tier militaries will be able to dominate Third Tier militias and private armies, but will often find the potential costs of doing so too high to justify military intervention. The war against terrorism will prove especially problematic.

Second Tier militaries, with their large size, ability to undertake sustained, intense operations, and greater tolerance for casualties, will be generally effective against Third Tier forces. And, while Third Tier forces will be unable to stand and face Second Tier militaries, Third Tier states will find that

their lack of inhibition on the use of indiscriminate violence gives them some influence in the First and Second Tiers, particularly when they can use terrorism to extort concessions or deter intervention. Consequently, there will not be a clear hierarchy of military dominance among the tiers, for all situations.

TIER ASSESSMENTS

First Tier.

In the 21st century, the extent of global interdependence, particularly among First Tier states, will discourage national isolationist tendencies. In fact, isolationism of any substantive degree will not be a viable posture for any First Tier state. The real issue will be the extent to which First Tier states will be willing to sacrifice portions of their sovereignty to enjoy the benefits of First Tier economic and security arrangements. This issue could become particularly controversial for the United States.²⁴ Its cultural and political beliefs that sovereignty is freedom expressed at the national level, and that sacrifices of sovereignty can result in abridgement of individual liberties, may limit its political cooperation and economic competitiveness with other First Tier states. Nonetheless, a nation's competitive position within the First Tier will be determined in large measure by its adroitness in forging beneficial international accommodations, while simultaneously pursuing economic advantage.

Co-option through consumption will become more widely recognized as a powerful force in achieving economic advantage, if not dominance, and will directly impact national security. The creation of international dependence on a nation's products will also become a very important method of acculturation and a means of reducing differing societal values. Consequently, if the United States were able to expand markets for its commodities, it would be able to limit compromises of its culture and societal values as it competes economically within the First Tier.

Intra-tier Competition and Conflict. Economic and security interdependence among First Tier states will belie intra-tier national security concerns. Such interdependence will not reduce competition among First Tier states but will make it more subtle and complex.²⁵ Although conventional armed aggression among First Tier states appears implausible, they will seek to enrich their populations both by cooperative actions to enlarge the international economy and by competing fiercely to gain economic advantage. These information based states will increasingly generate wealth by making possible the more efficient supply of primary products from mostly Third Tier states, the more efficient combination of the factors of production, both

domestically and by Second Tier states, and the more pervasive servicing of markets.

Thus, First Tier states will assist their commercial entities in vying more aggressively for managerial influence and entrepreneurial control over the production and marketing of all commodities and will view information as the primary instrument for pursuing those goals. With future conflict among First Tier states principally on an economic footing, economic vitality will be their primary national security concern. It will directly impact important domestic issues and will be the wellspring of the other instruments of national power. A nation's ability to invest in advanced technologies and rapidly convert them into instruments of persuasion, coercion, and force clearly will be a function of economic power.

Given the intense competition among First Tier states and the dependence of the other instruments of national power on their common economic foundation, the United States will have to craft national economic policy within the context of national security. The purpose of such policy will be to facilitate the development of a national economy that is sufficiently versatile and agile to assure U.S. preeminence in the combined application of all the instruments of national power.

The United States, like other First Tier states, however, will not openly embrace a more centrally controlled economy. On the contrary, in order to be perceived as fair competitors and to avoid retaliation, First Tier states will appear to allow their economies to follow free-market forces, to a large extent. However, key foreign and domestic policies, some public and some not, likely will be pursued to enhance national economic advantage.

The traditional study of economic theory for the purpose of explaining seemingly inexplicable economic events will prove woefully inadequate. A new economic discipline filled with aggressive and offensively oriented economic strategists will emerge. They will rank among the most valued advisors to government and industry leaders alike. The primary tools they will employ to assist their principals in achieving competitive advantage will be information and associated advanced technologies. Importantly, only First Tier states will be able to convert the vast amounts of information available into knowledge and then distribute it in the right forms and amounts, to the right places, at the right times, to serve national purposes.

First Tier Warfare. The development, control, and application of information age technologies will be vigorously competed within the First Tier. While First Tier states will consider overt conventional military aggression anathema to their

interdependence, they will employ covert information warfare to gain technological advantage,²⁶ to develop economic relationships with supplying and producing First and Second Tier states, and to develop, secure, and retain markets for all manner of commodities.²⁷ In doing so, they also will compete to achieve market advantage for their information services and other advanced technologies.

Therefore, a principal U.S. national security objective will be to develop and employ strategies to boost the expansion of the U.S. economy by simultaneously cooperating and competing with First Tier states, while retaining acceptable levels of U.S. sovereignty, civil rights, and individual freedom. This will be a high-priority objective. It will contribute directly both to the protection of Americans and to the promotion of economic prosperity. Additionally, fierce economic competition is almost certain to be a characteristic of the First Tier. The enabling national security strategic concept will be to apply a blend of the instruments of national power which achieves the best possible economic competitive advantage for the United States.

The strategic concept necessarily must have protective and proactive components. Traditionally, the complexities of national economies and their interactions have hindered development of national economic strategic concepts to increase international competitiveness. However, the abilities of First Tier states to collect, process, and comprehend unprecedented amounts of information will make a nationally orchestrated approach to international economic competition possible and necessary. This will require the conversion of economic theory into strategic art.²⁸

The information operations that will be necessary to implement this strategic concept will involve aggressive development, use, safeguarding, and marketing of advanced information technologies.²⁹ The military component of this national security concept will center upon the protection of key U.S. information resources and exploitation of U.S. information capabilities. The economic warfare that will be waged within the First Tier will be conducted largely in cyberspace.³⁰ The role of the Department of Defense (DoD) in both defensive and offensive information warfare will generate debate, but must be resolved.

Current trends indicate an acknowledgement of the threat of both domestic and foreign information attacks on U.S. systems, but also a lack of consensus on the roles of various government agencies in thwarting such attacks.³¹ While protection of U.S. information systems will certainly require interagency cooperation, the primary responsibility for international information warfare should rest with DoD.³² The defense provided by the military establishment from foreign attack logically

should extend to the entire nation and not be limited to DoD information and systems, as currently envisioned.³³ At a minimum, selected information systems, the disruption or exploitation of which would significantly impact fundamental national interests, should be designated key national assets deserving protection by DoD. Key asset information systems would include several government systems but would also include select commercial systems, particularly those that form part of the national infrastructure and economic base.

Domestic acts of information thefts, unlawful intrusion, and sabotage, however, should remain the province of civilian agencies, such as the Federal Bureau of Investigation, or perhaps an independent national information security agency. Problems will arise first in defining and then distinguishing between domestic and foreign attacks. For example, defense against foreign state-sponsored disruption of U.S. Government information systems would fall clearly within DoD's responsibility. Likewise, the responsibility for protecting domestic businesses from illegal entry, damage, or theft of information by domestic criminals would be assigned to U.S. law enforcement agencies. However, where the responsibility will fall for protecting domestic private organizations from information attacks and thefts by foreign governments or corporations will be less clear.³⁴ Applications of the Posse Comitatus Act as well as international law to cyberspace will be problematic because traditional concepts of national borders and sovereignty will not apply.³⁵

Nonetheless, the U.S. military will require capabilities that will enable it to perceive warning of information attacks on the United States and its population, at home and abroad. Additionally, the U.S. armed forces must be able to deter, prevent, preempt, and repel such attacks, if they are to continue to "provide for the common defense." Therefore, the U.S. military must have defensive information warfare capabilities to defend key U.S. information systems from information attacks.³⁶ The U.S. armed forces also must have offensive information warfare capabilities to deter attacks through threat of retaliation, to preempt attacks, and to wage all-out information warfare, if necessary.³⁷ The target set against which the U.S. military must plan will include nonstate actors as well as foreign governments. In the 21st century, the electron likely will be added to the list of weapons of mass destruction.³⁸

A secondary supporting strategic concept which will enhance U.S. competitiveness will be to negotiate and enter into advantageous economic arrangements with other First Tier states. Such arrangements may include collective economic and information cooperation and nonaggression agreements. In some respects, such agreements may be viewed as extensions of mutual or collective

defense agreements, and the use of the U.S. armed forces to foster military cooperation and interdependence can encourage economic and information arrangements as well.

Of particular importance to the U.S. military, however, is the fact that its focus on the application of controlled violence to "fight and win the nations wars,"³⁹ with a view toward finite political objectives will be inappropriate for the application of military power within the First Tier. Among First Tier states, there will be few discrete, adversarial "military" operations with definitive beginning and ending points.

Military participation in intra-First Tier rivalries, therefore, should be continuous and seamlessly integrated into the national security strategy. That will require military leaders with competencies significantly different from those prevalent today. They must be as capable of contributing to the development of economic, informational, and diplomatic strategies that appropriately incorporate the capabilities of the U.S. armed forces as they are at crafting military strategies.

Proportional Defense. The interdependence of First Tier states will give rise to another national security concern. There will be sufficient commonality of national interests and sharing of sovereignty within the First Tier to give rise to multilateral and bilateral collective security agreements to defend against threats posed by the other tiers. The willingness of First Tier states to bear the costs of such defense will vary, and precedence suggests many will seek to assign an unfair share of those costs to the United States. The United States will be tempted to accept a disproportionate burden in the interest of preserving as much of its sovereignty as possible, thus, allowing it to act unilaterally, if necessary.⁴⁰ The intensely competitive nature of the First Tier, however, will render U.S. acceptance of immoderate responsibilities for ensuring global peace inimical to fundamental U.S. interests.

In addition to the responsibility for homeland defense incumbent upon all sovereign nations, all First Tier states will have global interests to protect and promote. U.S. economic competitiveness would be seriously weakened if it donned the mantle of guarantor of global peace. The United States should not attempt to provide the basis for stability in every critical region of the world; it must rely on other First Tier nations to orchestrate peace and order in regions where their interests predominate. In critical regions where no First Tier nation has primacy of interest, the United States must join with other nations to provide security, possibly through Second Tier states. Therefore, another First Tier oriented U.S. national security concept relating to both fundamental U.S. interests is that the United States will not act as the surety of First Tier states for

unfettered international commerce, but will be a full participant in collective efforts to ensure global stability. This also should be a high priority national security objective because of its strong relationship to both fundamental U.S. national interests and because of its certain applicability.

The military strategic concept for supporting this objective requires the U.S. military to take actions to ensure it is interoperable and rationalized with the armed forces of other First Tier states. To implement this concept, the U.S. armed forces must increase military-to-military contacts, combined exercises and operations, technology sharing, and other activities to enhance synergy among First Tier militaries.⁴¹ The U.S. industrial base, by exploiting superior technology, should strive to supplant arms development efforts in other First Tier states and foster interdependence by granting production licenses to selected states.⁴²

Additionally, any U.S. military contribution to alliance or coalition operations must satisfy the U.S. public's expectation of appropriately low costs of intervention in terms of national resources expended. This will be particularly true with respect to U.S. casualties. At the same time, the United States must be able to convince allies and coalition partners that the nature and extent of U.S. participation is equitable in terms of risks and interests at stake.

This evolving national philosophy suggests two maxims. First, the intervention risks and costs the United States will be willing to bear will be more closely regulated by its specific interests. The national leadership, advised by senior military leaders, must be able to explain and substantiate the costs, risks, and benefits of proposed military operations in advance,⁴³ and will be subjected to subsequent accounting. Second, the United States, as a general rule, will not accept costs disproportionate to its interests merely because its technology and economic strength permit it to do so at lower risk and with less national anguish than coalition partners would endure.

Nevertheless, in some situations the United States will enjoy sufficiently favorable intervention risk differentials over potential coalition partners to warrant U.S. intervention where other First Tier states with similar interests may be reluctant.⁴⁴ Such differentials will continue to grow as the United States applies and integrates advanced technologies in response to domestic pressures. Because it will be able to intervene with less risk, the United States may choose, on a crisis-by-crisis basis, to assume some disproportionate fiscal costs in order to attract coalition partners.

In short, the U.S. armed forces will require intervention

capabilities along the entire continuum of military operations which will allow them to intervene at cost and risk levels significantly lower than those achievable by potential adversaries. The ability of the United States to mitigate intervention risks, however, can act to its disadvantage if relied upon too heavily.

Limitations of Nuclear Deterrence. One aspect of the equitable risks and costs concept that warrants separate assessment is extended nuclear deterrence. That strategy was understandable for the United States during the Cold War since the United States provided the principal targets for a Soviet nuclear strike. The large nuclear arsenal that the United States had to maintain to deter credibly a Soviet attack on the continental United States made deterrence of Soviet nuclear attack on other countries achievable merely by adoption of the extended deterrence policy.⁴⁵ Little additional expenditure of national resources was required. The policy enabled the United States to negotiate nonproliferation concessions from several friendly states and to form strong alliance bonds.⁴⁶ Those concessions and bonds helped stem the proliferation of nuclear weapons globally. Past success notwithstanding, the extended nuclear deterrence policy will prove inadequate in the future.

It is no longer a question of whether Second, and possibly some Third Tier states will be able to threaten First Tier states by developing or otherwise acquiring nuclear weapons and the means for their use.⁴⁷ For reasons that will be discussed in the Second Tier assessment that follows, the pertinent question now is how quickly and to what extent proliferation will occur.⁴⁸ Consequently, directly serving both fundamental U.S. interests, the third high priority U.S. national security objective is to provide strategic defenses against nuclear and other WMD.⁴⁹ The supporting strategic concept applicable to First Tier states is that extended nuclear deterrence must be supplemented by common strategic defense against WMD. The United States should lead this effort but should not bear the total costs of defending the First Tier against this expanded nuclear threat; such defense must be a collective First Tier effort in terms of costs as well as benefits. The military component of this strategic concept will be to lead a combined effort to develop and deploy strategic defenses against WMD throughout the First Tier,⁵⁰ and to provide exportable or deployable defenses to selected Second and Third Tier states. Those defenses must be directed against all modes of delivery of WMD.

Second Tier.

Second Tier states will present many challenges and opportunities to the United States as it pursues its national

security interests in the 21st century. With largely manufacturing-based economies, Second Tier states will build regionally oriented armed forces which incorporate many advanced technologies, but still feature conventional armored, mechanized, and light infantry units that are capable of regional aggression. Such forces will be suitable for occupying territory and controlling populations. While Second Tier states will design their armed forces for regional defense or hegemony, they will attempt to incorporate features that will make their militaries more resistant to coercion or deterrence by First Tier armed forces.⁵¹

Hybrid States. Some Second Tier states will field hybrids of industrial and post-industrial armed forces through the large-scale development, purchase, or acquisition by other means, of advanced technology. For example, although they will field conventional armor, infantry, and artillery, they also will acquire fairly large numbers of anti-information systems, anti-and counter-satellite weapons, advanced air defense systems, and ballistic as well as cruise missiles. As previously mentioned, many Second Tier states will possess WMD and may use those or other capabilities to deter First Tier intervention or to deny First Tier states access to facilities necessary to implement a power projection strategy.

The two most likely and worrisome First-Second Tier hybrid threats to U.S. interests will come from Russia and China. Because neither is likely to become a consummate First Tier state within the time frame considered by this study, neither is likely to emerge as a multidimensional global threat.⁵² However, both will be capable of posing global nuclear threats⁵³ and also will become more assertive regional hegemons. Additionally, if the two countries should choose to collaborate and coordinate their foreign policies to provide a unified counterbalance to U.S.-led Western international influence, the ramifications certainly would be global.⁵⁴ Consequently, because these two hybrid states have the potential to threaten, directly and seriously, fundamental U.S. interests, their engagement will be a high priority national security objective.

Paradoxically, Russia and China also will present opportunities to further U.S. interests as their changing or expanding economies allow them to become markets for U.S. commodities, and as their internal economic initiatives increase investment opportunities for U.S. firms. Consequently, the United States must constrain the regional hegemony of these two hybrid states, deter large-scale conventional aggression, encourage responsible international behavior, and assist in internal economic reforms. The potential threats and opportunities posed by these two hybrid states suggest several military strategic concepts.

The United States must be capable of mitigating the coercive influence of these WMD states through a combination of strategic deterrence and defense. Also, the United States must maintain conventional military capabilities sufficient to raise the costs of aggression by these two states above the thresholds acceptable by either for any foreseeable regional objectives which directly threaten U.S. fundamental interests. To do so, the United States must keep its costs of intervention relatively low. Particularly, the United States must possess rapidly employable, symmetrical and asymmetrical,⁵⁵ counterconventional capabilities backed-up by responsive conventional land, sea, and aerospace forces.

Additionally, the U.S. armed forces can assist the nation in taking advantage of the opportunities presented by these two states by supporting diplomatic efforts to assimilate the two countries into the community of free-market democracies.⁵⁶ Given the historic social and political roles of the militaries of the two countries,⁵⁷ the U.S. military will be able to complement diplomatic efforts if it develops and maintains robust military-to-military contact programs as principal confidence and security building measures.

Apart from the special challenges posed by Russia and China, the United States and other First Tier states will occasionally find it necessary to resort to violence to coerce or defeat other Second Tier states. The common desire of First Tier states to minimize casualties during such conflicts will be a major influence in U.S. force development. Robotics and other brilliant weapons platforms will become increasingly attractive, but their limitations in actually resolving conflict and promoting interests must be recognized. Nevertheless, long-range, stand-off strikes and reliance on nonlethal or less-destructive weapons (including weapons aimed at psychological incapacitation rather than physical harm) should play increased roles.⁵⁸

Because of First Tier casualty aversion and the expense of weapons systems based on advanced technology, a dissymmetry in warfare doctrine will develop between First and Second Tier states. While First Tier militaries will seek short, violent, and simultaneous operations, Second Tier states will prefer sustained campaigns which impose ever-increasing tolls on adversaries. First Tier political leaders will be reluctant to use their powerful but small and casualty-averse militaries in operations that cannot be completed quickly, with commensurately low risk. Consequently, to dominate Second Tier militaries, the U.S. armed forces must develop doctrine and equipment that can overcome the classic concept of deliberate, sustained, and sequenced campaigns. The U.S. military, therefore, must further develop the notion of synergy through simultaneous, orchestrated operations to take full advantage of advanced technologies.

Most First Tier conventional military operations against Second Tier states, therefore, will rely largely on offensively oriented concepts such as strategic spoiling or punishing attacks which employ asymmetrical capabilities. Senior U.S. military leaders must be able to rapidly adapt and reconfigure military organizations as tasks and conditions change. Leaders must plan and execute short, decisive, multi-faceted, and harmonic conventional operations, which complement the applications of the other instruments of national power. The essence, therefore, of strategic leadership will be creativity in planning, mental agility during complex and compressed decision environments, and cognizance of the costs and benefits of longer term operations to secure land masses and control populations.

Thus, a demonstrable capacity to fight and win large-scale conventional wars will be required to hedge against unlikely, but possible, large-scale regional aggression by Second Tier states, singly or in combination. Deterrence or reversal of such aggression will be a medium priority national security objective because few Second Tier states will be willing to threaten fundamental U.S. interests through direct and overt large-scale aggression.

A New Strategy for Major Regional Wars. Fiscal constraints and other social and political pressures will preclude the United States from maintaining sufficient symmetrical active duty forces to fight and win multiple major regional conflicts. Therefore, a three-part strategy for dealing with major regional hegemony must be pursued. First, information technology must be coupled with a robust intelligence network to increase significantly the quantity and quality of strategic warning. Twenty-first century intelligence capabilities, enhanced by information technology, will be able to render strategic surprise by Second Tier states a very rare occurrence. The United States, on the other hand, must be able to use its information dominance to achieve surprise at all levels of warfare.

The second component of the strategy for dealing with large-scale regional threats requires effective preemptive and responsive asymmetrical strike capabilities sufficient to deny aggressors early accomplishment of their objectives. This will require U.S. Active Component forces consisting largely of asymmetrical capabilities and Reserves containing the bulk of the nation's heavy, symmetrical combat forces.

There are at least three reasons for the United States to enhance the asymmetric capabilities of its armed forces. First, asymmetric concepts call for fewer military personnel to be involved in direct combat and, thus, the potential for casualties will be reduced. Second, the United States understandably will

seek to take advantage of its technological strength to develop smaller but more effective forces. Third, armed forces composed of fewer, albeit high technology, systems offer increased flexibility not only in application, but also in expansibility.

As the United States becomes a more information and technology based nation, its domestic manufacturing capacity will be increasingly agile, and the time required to produce military equipment will be shortened significantly. This, combined with other factors such as casualty aversion and the desire to project military power rapidly, will naturally lead the United States (and other First Tier states) toward fewer, but increasingly advanced, weapon systems.⁵⁹ Those weapon systems should be multi-mission capable and able to be rapidly assembled into synergistic "systems of systems" tailored for specific uses. To the extent practicable, they should be employable from their peacetime posture.⁶⁰ Those systems that require deployment for application must be more rapidly deployable and feature significantly reduced logistical support requirements.

In the 21st century, increased U.S. production agility, even for high technology weapon systems, not only will permit the United States to maintain a smaller force in being,⁶¹ but also will enable the it to achieve mobilization dominance should significant regional threats or a global competitor begin to emerge.

The third strategic concept for attenuating potential threats by Second Tier regional hegemony follows from the second. The greatest impediment to an asymmetrical approach to deterring and defeating Second Tier militaries will be the staggering costs of high technology asymmetrical systems. Resource constraints and operational necessity will prevent the United States from abandoning its cumbersome and less responsive symmetrical warfighting capabilities in the foreseeable future. The costs of asymmetrical systems, however, can be off-set to some extent by the transfer of symmetrical capabilities to the Reserve Components. For this to be done at an acceptable level of risk, the time required to mobilize and deploy reserve forces must be shortened significantly. This will be possible through advances in technology leading to quantum improvements in training effectiveness and efficiency, innovative strategic mobility concepts, and unprecedented industrial base agility.⁶²

Risks of the Asymmetric Strategy. Nonetheless, the asymmetric warfare based approach to deterring or defeating Second Tier states will pose several risks which must be addressed. First, as the United States becomes a more information and technology based nation, more U.S. manufacturing capacity will be displaced to Second and Third Tier states. This will increase the probability that political alignments at the

outbreak of regional crises will leave the United States in a position where it cannot be assured of steady or increased supplies of critical components and sub-components. Even if the international political mosaic does not interfere with the production of such components, potential Second and Third Tier manufacturers may not have sufficient agility to meet the increased U.S. demand in a timely fashion. Large stocks of war reserve materials will not be an effective hedge because the accelerated rate of technological obsolescence will preclude substantial investment in them. For whatever reason, production of defense components and sub-components by Second and Third Tier states must not be allowed to limit U.S. options in preventing, deterring, or responding to regional crises.

The strategic concept which flows from this concern is that DoD must ensure the reliability and agility of those industries whose production capabilities may be called upon to expand rapidly the capabilities of the U.S. armed forces and those of key allies. In structuring and acquiring the force of the future, DoD need not specifically plan for and fund a reconstitution capability. That capability will be inherent in the advanced production agility of the United States and other First Tier industrial bases. However, DoD must include industry in its force requirements and contingency planning processes to the extent that industry will be able to determine how best to position itself to accept and fulfill potential defense contracts.

The second asymmetric warfare caution flows from the 1990-91 Persian Gulf war experience. DESERT STORM perhaps was not the prototype for future wars, but was notable only in that the Iraqis did not appreciate the magnitude of the difference in capabilities between their industrial era forces and the coalition's hybrid industrial/ post-industrial forces. At Iraq's expense, that difference was graphically demonstrated for the entire world.

DESERT STORM, however, did not render industrial era armed forces obsolete. They remain best suited for conquest of territory and control of populations, the primary tools of regional hegemons. The use of such forces in the future for purposes inimical to U.S. interests will be restricted to situations in which adversaries calculate, reasonably or otherwise, that the costs of intervention for the United States can be raised to levels which outweigh potential benefits. Those costs will be measured in terms of human lives, collateral damage, fiscal resources, and political capital. Benefits will be measured in terms of the protection or advancement of fundamental U.S. interests that intervention will provide.

In prosecuting future campaigns, regional hegemons will act incrementally, when practicable, to minimize the apparent threat

to U.S. interests of each act of aggression, while employing methods which elevate U.S. intervention costs. Consequently, aggression is most likely to occur where U.S. interests at stake are perceived by the U.S. public and political leaders to be peripheral, the aggressor is in pursuit of what it considers to be its vital interests, and where the aggressor can inflict substantial costs upon the United States should it attempt to intervene.

Furthermore, the United States should not expect to face a future adversary who arrays his forces in largely uninhabited areas and patiently awaits attack. Future regional aggressors will seek to intermingle their forces with civilian populations to force the United States to choose between accepting civilian casualties, collateral damage, and the associated political liabilities, or constraining its response, perhaps to the extent of rendering it ineffective or inappropriate.

In pursuit of this incremental aggression strategy, Second Tier aggressors also will develop or purchase relatively low-cost methods of attenuating the effectiveness of high-cost U.S. weapons systems and increasing U.S. casualties. Additionally, Second Tier aggressors will attempt to deter U.S. intervention by threatening the use of WMD and employing other forms of terrorism as strategic weapons.

Consequently, with respect to Second Tier states, the United States must deter, preempt, or reverse incremental acts of aggression at commensurately low costs in terms of casualties, resource expenditures, and political capital. This will be a medium risk national security objective. Although individual incremental acts of aggression may not seriously affect fundamental U.S. interests, they are almost certain to occur, and, as they accumulate, they will have insidious and significant cumulative impact.

To negate the risk of incremental regional aggression, the United States must adopt a national security concept which calls for increased versatility within and among the instruments of national power. Several military capabilities are suggested. First, the U.S. armed forces must be capable of long-range precision strikes on targets valued by adversaries and considered legitimate by the American public. Although useful and important, the ability to strike with relative impunity, however, will be no more a complete and sufficient military strategy than were nuclear weapons in the 1950s.⁶³ In the future, as in the past, human conflict will ultimately be resolved through human interaction.

Conventional escalation dominance should be an essential feature of the U.S. strategy.⁶⁴ It will require a seamless and

synergistic blending of all the instruments of national power. Better integration of the military instrument will require abandonment of the belief that military capability must be considered only as a last resort. The military instrument must be integrated into the implementation of the national security strategy at the outset. Military capabilities in the areas of information dominance, intelligence, force protection, and nonlethal warfare will increase the coherence of military contributions to thwarting incremental acts of aggression. These capabilities must be assembled into agile and versatile units that can be rapidly custom-blended with each other and with the other instruments of national power.

The blend must provide for the best combined application of the instruments to achieve and maintain escalation dominance at any level of conflict. This will require the development and acquisition of multi-role equipment designed against comprehensive mission profiles that reflect the full potential range of military operations. Single-threat units and weapons systems must become relics of the past. Physically smaller, but more versatile, rapidly reconfigurable, multi-mission capable military units will be required to provide a more efficacious combination of military capabilities with the other instruments of national power.

To defeat Second Tier militaries, U.S. forces also must be able to identify and engage hostile forces interspersed with civilian populations while simultaneously rendering assistance to those populations, and must be able to do so with minimum U.S. and noncombatant casualties. Asymmetric strike capabilities will be effective and efficient for destroying conventional formations of industrial age military forces, but requirements to do so may be few. Such capabilities will be of limited use in situations where there is the potential of inflicting unacceptable damage on a victimized country in order to save it or, alternatively, on a population whose repressive government has forced it into war. Those situations will require the customized application of military capabilities that only specially trained, equipped, and organized ground forces can produce. Advanced technology must be applied to enhance the effectiveness and security of U.S. and allied ground forces engaged in urban and other operations where adversaries, unconstrained by the international laws of armed conflict, seek sanctuary by intermingling with noncombatants.⁶⁵

Specifically, future U.S. ground forces will require better individual and unit protection capabilities, access to nearly instantaneous and precise combat support and service support, and real-time information on friendly, enemy, and nonbelligerent dispositions and intentions.⁶⁶ Additionally, future ground forces must be more agile, less logistically constrained, and capable of causing a greater array of lethal and nonlethal effects.⁶⁷

This will require ground forces which generally are as survivable as current armored and mechanized units, as strategically agile as current light or airborne units, as tactically and operationally mobile as current armored, mechanized, and air-assault units, and capable of forming rapidly into various combinations to produce any required effects. Many of the technological innovations which must be applied to future ground forces are clearly foreseeable; for example, advanced soldier ensembles, remotely controlled ground and air reconnaissance vehicles, robotic sentries, robotic mine and chemical, biological, and radiological detection and warning systems, advanced psychological operations and perception management capabilities, enhanced situational awareness, precisely accurate fire support, instantaneous non-line-of-sight burst communications, and nonlethal but incapacitating weapons, to name a few. These and other technologies and innovative organizational concepts must be applied to ground forces to enable them, at reduced risks and costs, to deter or defeat future adversaries who will abide by no civilized rules and will go to any extreme to achieve victory.

The Second Tier WMD Risk. Another Second Tier risk which must be addressed is the threat of use, or use, of WMD. As suggested earlier, deterrence through threat of retaliation will not be a complete strategy. Traditional nuclear deterrence may suffice to prevent a strategic nuclear exchange between major nuclear powers,⁶⁸ but cannot be relied upon to negate the threat of or actual use of WMD by rogue states.⁶⁹ Providing for defense against weapons of mass destruction should be a high priority national security objective because of the significant and direct impact WMD would have on DoD's ability to defend the nation. Additionally, defenses against WMD would contribute indirectly to the promotion of American economic prosperity by freeing the nation from the coercive influence of nuclear armed rogue states and fortifying the international confidence in global stability necessary for robust international trade.

Several considerations strongly suggest that proliferation of WMD will not be adequately stemmed to negate the need for strategic defenses. WMD weapons design information and essential materials will become easier to attain.⁷⁰ Absent their negation by strategic defenses, WMD will continue to have political, if not military utility.⁷¹ The vast underground development facilities in many Second Tier states will allow research and development or reverse engineering to go undetected.⁷² The future availability of nuclear weapon performance and reliability assurance procedures which do not require actual detonations will make covert development programs much more difficult to detect.⁷³ Even if detected, the destruction of WMD capabilities through preemptive strikes is an unattractive option because it is unreliable and

because of possible collateral effects.⁷⁴ Consequently, the rate of proliferation will not abate but will likely increase significantly, in spite of the best diplomatic efforts.⁷⁵

Additionally, strategic defenses will be required because WMD in the hands of unpredictable governments pose insoluble deterrence problems. First, as many analysts have noted, the rational actor deterrence model may not apply. A rogue government that rules through oppression may well calculate that it could employ nuclear weapons without suffering retaliation in kind since the aversion to collateral damage and civilian casualties prevalent among First Tier states may prevent them from mounting a nuclear response that would risk punishing the subjugated population of the offending state. And even if a response were mounted, the rogue government, itself insensitive to the suffering of its people, could portray the country as having been victimized by the First Tier. That could enable the government to strengthen its hold on power.

A second obviation of the rational actor model may result from fanaticism; where whole societies, because of their extreme beliefs, would willingly risk nuclear retaliation for the opportunity to wreak devastation upon an ideological enemy. Or, alternatively, such radical states may not see the need for effective checks and controls to prevent unauthorized or accidental use of WMD by fanatical zealots. While, in some cases, the United States might be the principal target of such fanatics, other First Tier states also will be vulnerable.⁷⁶

Another factor which will expose the inadequacy of extended nuclear deterrence and argue for comprehensive strategic defenses is the potential for nuclear terrorism.⁷⁷ Continued advances in miniaturization technologies and their increased commercial availability will make it possible to construct nuclear devices that are more easily smuggled into a country. Increased international interdependence will result in more porous national borders. It is still far from clear that the breakup of the Soviet Union left all fissile and other critical bomb making materials, technical data, scientific personnel, and actual weapons under positive control.⁷⁸ Additionally, Russia and China have demonstrated a willingness to supply rogue states with nuclear and missile technology.⁷⁹ Nuclear white and black markets will exist that will make it quite conceivable that rogue states, or the terrorist groups they may sponsor, could acquire the makings of powerful, but small and concealable, nuclear weapons.⁸⁰ And generally, terrorists, by nature, are seldom rationally deterrable.

As the efficacy of nuclear and ballistic missile nonproliferation measures becomes increasingly suspect and confidence in extended nuclear deterrence and its relevance

fades, other First Tier states will seek alternative methods of providing for their security against nuclear attack, extortion, or hand-cuffing. Development of their own nuclear arsenals is neither a viable nor desirable option. The attempt to create a self-contained deterrence capability would, at best, be only marginally more effective than extended deterrence, but would provide the new nuclear states autonomy in deciding whether to retaliate. Therefore, it could be seen as the only practicable option available to many First Tier states. It is quite conceivable, therefore, that proliferation will beget increased proliferation.

A better recourse would be the development and deployment of defensive systems to supplement and eventually obviate extended nuclear deterrence. Currently, the United States is leading First Tier states in the serious pursuit of missile defenses.⁸¹ Domestic debate over the U.S. initiative to provide protection from attacks by a limited number of nuclear missiles, both within the United States and within regions of conflict, largely centers upon the substantial costs of the effort and its timing.⁸² Only the most radical opponents of strategic and theater missile defenses believe that the threat can be eliminated through negotiation alone.⁸³ Second and Third Tier states bent on becoming nuclear powers cannot be expected to abandon their efforts, or in many cases relinquish ownership, so long as substantial political benefits accrue to members of the nuclear club. The development and deployment of effective national, exportable, and deployable systems to defend against ballistic and cruise missiles armed with weapons of mass destruction will diminish the benefits of possessing such weapons, and, concomitantly, will provide the best means of stemming proliferation.⁸⁴

The United States, therefore, must emplace national missile defenses capable of defending against ballistic and cruise missile attacks not only to shield it from such attacks, but also to negate veiled or overt threats made to achieve coercive political advantage.⁸⁵ Additionally, those defensive capabilities should be exportable to select First and Second Tier states. Deployable theater missile defenses should be available for the protection of deployed forces and ad hoc coalition members.⁸⁶ Though costly, those defenses will be necessary if the United States is to retain its strategic freedom of action and ensure allies or coalition partners are able to do likewise. As previously mentioned, other states must cooperate and bear their share of the costs of common defense against weapons of mass destruction, rather than relying on an outmoded policy of U.S. nuclear deterrence.⁸⁷

Second Tier Terrorist Threat. The defense against the human cruise missile, the terrorist armed with WMD, will be a more problematic Second Tier threat.⁸⁸ He or she may well be the

greatest threat to U.S. national security in the future.⁸⁹ The WMD terrorist may travel slower but will be smarter than the most brilliant munitions and will have formidable stealth capabilities. Protection against strategic attack, therefore, also must include effective defenses against the terrorist threat.⁹⁰ Technology may make such a defense possible, but it will involve significant costs and international cooperation. While the imperative to be able to defend against WMD wielded by terrorists will become apparent within the First Tier in the near- to mid-term,⁹¹ a coordinated approach to providing such defenses is a longer term objective.

Terrorists armed with WMD would impact directly both fundamental U.S. interests. Not only can WMD terrorists inflict horrendous physical damage and loss of human life, they also can create fear and instability which would significantly degrade the quality of life for all Americans.⁹² The elimination of WMD terrorists, therefore, will be a high priority national security objective. Defense against this weapon system can be accomplished only by an effective combination of early detection; preemption at point of origin; interception enroute; terminal defeat by national defenses; and mitigation of effects, capture, punishment, and attribution, should preemption and interception efforts fail.

These national security strategic concepts will require unprecedented international, interagency cooperation and collaboration. Adequate detection will require substantially increased intelligence capabilities, particularly human intelligence.⁹³ It also will require more cooperative information sharing by militaries, law enforcement agencies, and national intelligence organizations around the globe. This will require increased interoperability of information systems and protocols.⁹⁴ At the same time, however, intricate safeguards must be emplaced to protect U.S. information and intelligence systems from unwanted disclosure, disruption, and unauthorized exploitation of select information.

International agreements that sanction cooperative preemption and early interception and define the right of a state to act beyond its borders in reactive or proactive self-defense must be strengthened and expanded. The United States should sponsor actions in international fora to establish and enforce international law which specifies severe penalties for states that sponsor, facilitate, condone, tolerate, or in any way acquiesce to terrorist use of WMD. International law should assign all states the affirmative duty to seek out and eliminate terrorists within their borders.

The United States must apply new technologies to secure its borders against the entry of WMD and market the technology

worldwide.⁹⁵ Additionally, the United States must be able to protect its population, interests, and property abroad. There must be clear lines of responsibility and authority drawn between the U.S. armed forces and other government organizations.

To support these national security strategic concepts the U.S. armed forces must develop effective and more robust counterterrorist capabilities to augment more effectively its antiterrorist efforts.⁹⁶ Information technology must be exploited to its maximum potential to assist in the development of intelligence. A human intelligence network different from and more comprehensive than that which existed during the Cold War must be established.⁹⁷ Nonhuman intelligence systems are limited in detecting terrorist intentions and preparations, particularly preparations that take place in underground or other clandestine facilities. Not only must future human intelligence capabilities be expanded, they must be significantly enhanced by remote, real-time access to other information sources, data bases and processing capabilities; micro optics, acoustic devices, and other sensors which replicate but greatly magnify the human senses; stealthy, instantaneous, and long-range information transmitters; and other advanced technologies. Intelligence gathering operatives of the 21st century must not only be covert and clandestine operations specialists; they also must be well-rounded technologists.

Furthermore, defense intelligence organizations must collaborate with counterparts in friendly states of all three tiers and must provide support to U.S. domestic law enforcement agencies. The armed forces should increase their emphasis on developing advanced technology for detecting chemical and biological agents and nuclear materials, and should share the technology with law enforcement agencies, particularly those responsible for border security.

The most important difference between the future military strategic concepts for dealing with the terrorist threat and those employed today is that the former must have significant offensive as well as defensive components.⁹⁸ Although today terrorism is viewed largely as a law enforcement problem,⁹⁹ it must be viewed as a form of warfare in the 21st century.¹⁰⁰ The historic reluctance to give terrorists soldier status has subdued the U.S. military's response to the terrorist threat. The unwillingness to treat terrorism as warfare must be overcome in light of the evolving international security environment. Unlike the use of law enforcement agencies, the United States should not have to wait for an offense to be committed to employ its military and should not necessarily require proof beyond a reasonable doubt.¹⁰¹

Because of the massive devastation WMD terrorists will be

able to wreak, the United States must develop capabilities to uncover, search out, and neutralize them before they are able to strike. Prevention through preemption will be an important component of the counterterrorism strategy. Preemption capabilities should be manifold, ranging from antiterrorist teams equipped with lethal and nonlethal weapons to non-nuclear capabilities for attacking deep underground facilities.¹⁰²

On the defensive side, a two-part strategy will be required. First, assuming that domestic law enforcement agencies, including the U.S. Coast Guard, will retain primary responsibility for controlling U.S. borders, the U.S. armed forces' efforts to keep terrorists from reaching U.S. territory must be seamlessly integrated with law enforcement agency activities.¹⁰³ This will require interoperable information and intelligence systems and protocols, practiced target hand over methods and tactics, preestablished force augmentation criteria and procedures and, most importantly, clear lines of responsibility and authority.¹⁰⁴

Second, techniques and equipment developed by the military for decontamination, treatment of mass casualties, and disaster relief could significantly mitigate the effectiveness of a terrorist attack. Although a terrorist may carry out his attack, he may be denied his objectives if he is unable to provoke the intended terror. DoD capabilities to reduce damage, suffering, and fear should be formally shared with civilian authorities and incorporated into civilian training programs.¹⁰⁵ Specific interagency plans for military support to civilian authorities for a variety of WMD terrorist attack scenarios should be further refined, resourced, and exercised.¹⁰⁶

Although the challenges to U.S. interests directly posed by Second Tier industrial age militaries could be serious, generally such threats will be infrequent, lack surprise, and will be vulnerable to rather straightforward hedging strategies. The most troublesome exceptions will be incremental regional hegemony that does not clearly engage fundamental U.S. interests and state-sponsored or condoned WMD terrorism. Although the foregoing discussion of the need for strategic defenses against WMD focuses on the nuclear threat, the proliferation of other WMD will pose similar challenges.¹⁰⁷

Third Tier.

Third Tier states will provide the United States several national security challenges and opportunities. Many Third Tier governments will be unable or unwilling to provide basic services to their populations, which will result in significant civil unrest. Additionally, some Third Tier governments will be unable to maintain internal law and order and will be overwhelmed by

criminal elements, warlords, and hate groups. Furthermore, many Third Tier governments will be unable or unwilling to design and manage transitions to free-market democracies and to emplace and enforce responsible environmental controls.

Third Tier states, therefore, will be fertile breeding grounds for several threats to international peace. Their populations will suffer unremediated natural disasters as well as manmade catastrophes. This will lead to large refugee flows that will threaten neighboring states. The desperate populations will be susceptible to the influence of radical religious and other extremist groups that use terrorism as a strategic weapon. Although internal terrorism may be common, many Third Tier states will lack the resources or motivation to export it. However, by providing proxy terrorists, they may allow terrorist-sponsoring Second Tier states to build layers of deniability between themselves and their terroristic acts. Also, Third Tier government ineptness or corruption will attract large criminal organizations that will export their crimes from Third Tier states.¹⁰⁸ Finally, many Third Tier states, sometimes abetted by First Tier corporations, will savage their natural environments to the extent of causing serious long-term regional, and possibly global, environmental damage.

The impacts of these threats on both fundamental U.S. national security interests will not always be "clear and present," but, nonetheless, will be real and, in many cases, serious. Severe environmental damage can threaten the quality of life and, ultimately, the safety of Americans. Additionally, human suffering in the Third Tier will evoke the passions of Americans because it will be an affront to U.S. values and sensitivities, and because it will hinder economic activity and the promotion of U.S. prosperity. Additionally, although Third Tier states will seldom directly threaten fundamental U.S. interests, they will provide many opportunities for the United States to shape the international environment in ways that make U.S. national security objectives more achievable in the long term.

Importance of Third Tier Engagement. Because of its size, wealth, and power, U.S. ability to maintain effective international relations will remain a function of the extent to which its policies are seen as morally sound. Failures to respond to large scale human catastrophes may cast international doubt on U.S. motives. At best, this may result in ambivalent responses to U.S. foreign policy initiatives. At worst, it may create international distrust which may foster concerted action against U.S. interests. It may well be in the U.S. interest, therefore, to participate in humanitarian assistance operations within Third Tier states, even when fundamental U.S. interests are not directly or imminently threatened.

Additionally, the internal chaos that would accompany widespread human suffering within Third Tier states would preclude the development of stable sources of raw materials and, ultimately, markets for U.S. products. Populations undergoing widespread suffering will be forced to tend to their basic needs and will be unlikely to pursue popular democratic movements of any consequence. Therefore, dynamic market economies are not likely to develop.¹⁰⁹ That will discourage otherwise attractive investments by U.S. firms in Third Tier economies, further stunting their economic growth as well as denying potential profits to U.S. businesses. Consequently, U.S. efforts to mitigate human suffering in Third Tier states may indirectly but tangibly further the U.S. fundamental interest of promoting U.S. prosperity.

Furthermore, to the extent that the United States is able to gain economic commitments from Third Tier states, U.S. firms will be able to secure competitive advantages over First Tier rivals with respect to access to primary products and to out-sourcing the manufacture of labor intensive products. The ability to do so will be critical, given the fierce economic competition that will be prevalent among First Tier states. Although the United States will not choose, nor be able, to respond to all Third Tier tragedies, its strategic reach and global interests will encourage cultivation of mutually beneficial relations with Third Tier governments that control indigenous natural resources and industry. By providing disaster relief and humanitarian assistance when needed, the United States can secure preferential treatment by Third Tier governments and acceptance by Third Tier populations.

Finally, the United States must be able to improve the human condition of Third Tier populations that are vulnerable to exploitation by radical religious and other extremist groups. It must do so not only to reduce the potential pool of proxy terrorists but, more importantly, to make them more discoverable due to the development of pro-U.S. sentiments within Third Tier populations and governments. By making it more difficult for Second Tier states to train and recruit terrorists within Third Tier states, the United States can inhibit state-sponsored terrorism by forcing Second Tier states to resort to discoverable and attributable indigenous terrorists and facilities. By making it less difficult to hold such states accountable, the United States can reduce its vulnerability to state-sponsored terrorism. For these reasons, U.S. humanitarian assistance operations should not be limited to reactions to acute crises.

Because of its almost certain but indirect impact on fundamental U.S. interests, stability within selected Third Tier states should be a medium priority U.S. national security

objective. Although the United States must avoid overextension, it must have a national strategic concept for acting on its professed values, improving the prospects for economic development within the Third Tier, and protecting and promoting its interests by relieving human suffering. Such a concept, necessarily, must be part of an interagency strategy, but the DoD role will be important.

Level of Effort and Surge Operations. The military component of a national security concept aimed at fostering U.S. interests in Third Tier states must be multifaceted. It must combine "level of effort" and "surge" strategic concepts. There must be an ongoing level of effort to improve civil-military relations within Third Tier states, to conduct nation assistance activities that would provide visible signs of U.S. commitment to improving conditions for Third Tier populations, and to provide environmental preservation assistance.¹¹⁰ The continual presence of modest numbers of U.S. forces, productively employed, would enhance stability and provide steady influence.

The objective of the level of effort part of the military strategy should be continued, visible improvement in the general quality of life and steady movement toward or strengthening of democracy within Third Tier states. The U.S. Cold War strategic posture of large formations of forces stationed at selected overseas bases already has been greatly reduced. In the future, this forward defense concept must be completely replaced by one which provides much smaller, but more numerous groupings of forces which participate in a carefully orchestrated pattern of preventive defense¹¹¹ activities around the globe.

The groups must be tailored for the needs of the particular localities to which they are deployed and possess the skills required to interact with and assist host nation populations and governments. At the same time, they must be versatile enough to rapidly combine with other units to respond to regional crises. This will require rapidly reconfigurable, multi-mission capable equipment¹¹² and increased emphasis on language and cultural training. Furthermore, there must be greater use of innovative training techniques such as high fidelity weapon system and equipment simulators and frequent, globally integrated, simulated joint and combined exercises. Combined, versatile equipment and advanced simulation-based training can shorten significantly the time required for deployed forces to move from preventive defense missions to other types of operations.

Additionally, the U.S. armed forces must be capable of surging to provide instant assistance in the event natural or manmade disasters threaten to arrest or reverse progress made by level of effort activities. This will require rapidly deployable capabilities ranging from those required for disaster relief to

those capable of reestablishing and maintaining civil order. These requirements underscore the need for increased force adaptability and strategic agility.

More specifically, the U.S. armed forces must include organizations, in being, that can provide timely initial response to disasters until civilian resources can be marshalled and brought to bear, or until the U.S. military can create a safe environment for civilian organizations. Therefore, the U.S. armed forces must possess sufficient versatility and agility to provide effective initial response in disaster relief and humanitarian assistance situations, whether opposed or not.

Forces used to relieve human suffering must have the ability to provide the necessities of life to large numbers of people for short periods of time. Those necessities will include medical treatment, physical protection, transportation, food, water, and temporary living facilities. Additionally, the U.S. armed forces must be capable of assisting in restoring basic governmental services such as law and order, sanitation, and basic utilities.

Advanced technologies should be employed to increase the effectiveness of the myriad strategic environment-shaping activities that will occur in the Third Tier. Technology must be exploited to enhance the effectiveness of both individuals and units engaged in peace operations, humanitarian assistance, disaster relief, foreign internal defense, and other operations short of war within the Third Tier. Although Third Tier threats may be natural or manmade disasters, starvation, disease, or instability caused by those or other factors, the warfighting technologies useful for addressing Second Tier threats will have some application within the Third Tier. They must be supplemented, however, with more effective approaches to tasks such as separating belligerents, surveillance, internal security, mass field medical treatment, food and water distribution, temporary shelters, population control, transportation, law enforcement, and other tasks associated predominantly with Third Tier states. The current emphasis on exploiting technology to improve warfighting must be expanded to include nonwarfighting capabilities as well.

International Organized Crime. Conditions within the Third Tier also will require the United States to deal with organized crime beyond U.S. borders to protect its population and to promote its prosperity. International criminal organizations will continue to increase, grow, and integrate.¹¹³ Since they will frequently, albeit indirectly, threaten fundamental U.S. interests, their eradication will be a medium priority national security interest.

Those criminal elements will seriously challenge the authority of many Third Tier governments, and will actually usurp the governments of some states. Crime bosses will attempt to garner support among indigenous populations by offering economic incentives, and by threatening or inflicting physical harm. Their goals will not be ideological but material, and they will not hesitate to use terrorism to achieve their ends. Defeat of international criminal organizations will, in most cases, require the assistance of indigenous populations. Such assistance will not be forthcoming unless credible security from the threat of reprisal can be provided, and the economic incentives offered by the crime bosses can be replaced by legitimate economic opportunities.

The national security strategic concept which flows from the objective of thwarting international organized crime will call for a comprehensive interagency effort similar to that required to combat other forms of terrorism.¹¹⁴ DoD's contributions should include gathering and reporting information on foreign criminal organizations which threaten fundamental U.S. interests and proactive measures to encourage and assist host governments in eliminating those organizations.¹¹⁵

The United States can improve information gathering on criminal organizations based in Third Tier states by integrating the U.S. armed forces into interagency efforts that exploit all sources of information within the foreign country. The armed forces of Third Tier states often will be valuable sources of information concerning criminal elements operating from the country. In extreme cases, they may be affiliated with the criminal organizations. Through military assistance programs and increased military-to-military contacts such as mobile training teams, combined exercises, military advisory groups, and the like, the U.S. military can become a significant conduit through which information on foreign-based criminal organizations flows. Additionally, increased military-to-military contacts can be instrumental in reducing the influence criminal organizations may exert on Third Tier militaries.

Beyond these approaches, the U.S. armed forces must be able to assist Third Tier nations in combatting criminal organizations by helping to provide security for Third Tier populations and by providing training and equipment for indigenous security forces. Upon invitation, U.S. forces must be able to rapidly and efficiently assist Third Tier nations in locating and apprehending terrorists and organized criminal elements. In the event criminal elements within a Third Tier state supplant the legitimate government or otherwise pose threats to U.S. interests, the United States must be capable of removing the criminal elements, even without an invitation to intervene.¹¹⁶

The assessment of the three tiers reveals several national security concerns with associated military dimensions. It indicates the military capabilities the United States should field early in the 21st century, but are those the capabilities DoD is pursuing? To answer this question requires an examination of the nature of the future armed forces DoD is contemplating. The most recent description of future U.S. military capabilities was provided in the Chairman of the Joint Chiefs of Staff's *Joint Vision 2010*.¹¹⁷ The next section reviews the force capabilities the vision suggests.

JOINT VISION 2010

Describing the joint forces for the early 21st century as the "Emerging U.S. System of Systems," Admiral William A. Owens, former Vice Chairman of the Joint Chiefs of Staff, observed that the American revolution in military affairs is providing significant increases in three general categories of military capabilities. They are intelligence, surveillance, and reconnaissance; advanced command, control, communications, and computer applications; and the application of precision force. He believed that new technologies, particularly information technology, will enhance those three areas of military capabilities to the extent that a powerful synergy will be created, leading to a quantum increase in the effectiveness of the U.S. armed forces.¹¹⁸ Recently, General John M. Shalikashvili, Chairman of the Joint Chiefs of Staff, generally endorsed his former deputy's views by publishing *Joint Vision 2010*.

According to General Shalikashvili, *Joint Vision 2010* provides a template for the evolution of the U.S. armed forces by describing how technological opportunities will be exploited to achieve new levels of effectiveness in warfighting.¹¹⁹ The vision is one which would apply information and other technologies to current military systems to make them more lethal, effective, and efficient.¹²⁰ Thus, it is a vision of enhancing current military capabilities rather than creating new forces.

The themes of the vision, "persuasive in peace, decisive in war, preeminent in any form of conflict," suggest a wide range of applications of military force. The themes are consistent with the fundamental national interests identified in the vision: "enhancing US security, promoting prosperity at home, and promoting democracy abroad."¹²¹ Nonetheless, with the exception of a few brief references to lesser military operations¹²² and a passing acknowledgment of the relevance of strategic nuclear deterrence and defense,¹²³ the vision focuses exclusively on enhancing the nation's conventional warfighting capabilities through the application of technology to extant military forces. The vision embraces the Cold War era force structuring criterion that military exigencies short of large-scale conventional war

may be treated as lesser included cases. It goes on to say, that "operations, from humanitarian assistance in peacetime through peace operations in a near hostile environment, have proved to be possible using forces optimized for wartime effectiveness" (emphasis added).¹²⁴

Joint Vision 2010 reaffirms that the primary task of the U.S. armed forces will remain to deter conflict, and if deterrence fails, to fight and win the nation's wars. The vision calls for the armed forces to "otherwise promote American interests and values," but does not describe the scope or importance of that task. The vision identifies "power projection enabled by overseas presence" as the fundamental strategic concept for accomplishing both tasks, and indicates that forces should be optimized for warfighting.¹²⁵

The vision discusses five changes in the strategic environment that will help shape the U.S. armed forces for the early 21st century. The first is that while the public will continue to expect the armed forces to be effective, it also will demand increased efficiency in the conduct of military operations, measured in terms of casualties and resource expenditures. To achieve increased efficiency, the vision calls for more seamless integration of the capabilities of the four Services to permit more efficient joint operations. Notably, and perhaps due to its focus on warfighting, the vision does not address applying military power more effectively and efficiently within the blend of all the instruments of national power.

The second change in the strategic environment that the vision discusses is the increasing need to integrate and interoperate effectively with alliance and coalition partners. This will call for commonality of operational procedures, flexible equipment systems, and combined planning tools.¹²⁶

Third, the vision recognizes that proliferation of advanced technology will result in potential adversaries acquiring increasingly lethal modern systems and that small numbers of such systems can dramatically increase threats to U.S. forces.¹²⁷ Thus adversaries may be able to employ asymmetrical counters to U.S. military strengths, including its use of information technology.¹²⁸ Therefore, U.S. systems must be effective against a wider array of threats ranging from crude but somewhat effective counters to limited numbers of technologically sophisticated weapons.

Fourth, from a U.S. perspective, advancing technology will make long-range precision targeting combined with a wide range of delivery systems a key factor in future warfare. According to *Joint Vision 2010*, precision positioning, high-energy weapons systems, electro-magnetic technology, nonlethal weapons, the

ability to mask friendly forces, and enhanced stand-off capabilities will figure prominently on future battlefields. Technological advances will lead to increasingly lethal battlespace which will require increased use of stealth technology and greater force mobility to achieve better force protection.¹²⁹

The final change in the strategic environment discussed in the vision is the increasing importance of information superiority. Acknowledging the historic importance of information to warfare, the vision describes a future environment where unprecedented amounts of information are transferred with extreme speed and accuracy. The United States must have "information superiority: the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same."¹³⁰ To achieve superiority, offensive and defensive information warfare capabilities will be required, and there must be continued emphasis on developing strong, innovative leaders who are able to exploit advanced information technology.¹³¹

Joint Vision 2010 describes four operational concepts which will guide the application of the U.S. armed forces: dominant maneuver, precision engagement, full dimensional protection, and focused logistics. Although these concepts are discussed in general terms, they indicate the military capabilities the vision considers important.¹³²

Dominant maneuver involves the spatial and temporal positioning of force capabilities so as to keep an adversary at a constant disadvantage. It will require forces which are capable of conducting sustained and synchronized operations from widely dispersed locations. To do so, the forces must have accurate positional information on friendly and enemy forces, more accurate targeting capabilities at longer ranges, smaller physical size but increased lethality, and greater agility.¹³³

Precision engagement will be the product of better target location information, faster processing of engagement requests and orders, rapid massing of weapons' effects, faster and more accurate damage assessments, and timely reengagement, when necessary. It will require precision all-weather strike capabilities from extended ranges as well as accurate aerial delivery capabilities.

Full-dimensional protection will be built upon information supremacy that provides perfect knowledge of locations and activities of dispersed friendly units and enhanced knowledge of locations and capabilities of threats. This will allow U.S. forces to control the battlespace to ensure they can maintain freedom of action during deployment, maneuver and engagement.

This information base also will provide for the employment of a full array of active and passive protective measures. The Chairman's vision also explains that full-dimensional protection will require weapons systems capable of achieving and maintaining air, sea, space, and information superiority, as well as theater air and missile defense capabilities. Additionally, the vision calls for passive measures such as dispersed forces, stealth and camouflage, better sensors and information dissemination systems to enhance warning of chemical and biological attacks, and the ability to retain force effectiveness following chemical, biological, or nuclear attack.¹³⁴

The vision explains that the fusion of information, logistics, and transportation technologies will allow logistic support to be better tailored and focused on the requirements of deployed forces. This will require tailored, modular combat service support packages for a wide range of contingencies that are available in hours or days versus weeks. The vision does not call for any new logistics or transportation systems, but for the application of information technology to "extend the reach and longevity of systems currently in the inventory."¹³⁵

In short, the Chairman envisions that the convergence of these four concepts will provide U.S. forces the ability to dominate any opponent throughout "the full range of military operations from humanitarian assistance, through peace operations, up to and into the highest conflict." He calls that ability, "Full Spectrum Dominance."¹³⁶

FORCE CAPABILITIES COMPARISON

A comparison of the force capabilities envisioned by *Joint Vision 2010* to the military capability requirements suggested by the three-tier assessment indicates what force development actions must be taken now to ensure the United States fields forces appropriate for the 21st century international security environment. The comparison reveals considerable agreement as to the military capabilities that the United States will require. Nonetheless, there are some significant differences in the forces suggested by the two approaches.

Similarities.

The first important similarity in the future forces suggested by the three-tier assessment and those indicated by the Chairman's vision concerns leadership. Military leaders must become more knowledgeable of the nonmilitary instruments of national power to better craft strategies which synergistically blend the military instrument into larger national efforts.

Additionally, *Joint Vision 2010* and the three tier assessment agree that the U.S. public and political leaders will demand increased efficiency in the application of military power, particularly with regard to minimizing casualties. The U.S. armed forces must be effective and efficient along the entire continuum of military operations, and must be more interoperable with a wider range of potential coalition partners.

Also, U.S. systems must be more rapidly deployable and employable, with less burdensome, more focused logistics. *Joint Vision 2010* casts the concern for increased efficiency within a warfighting context; i.e., defending national interests at reduced costs. The three tier assessment adds to the *Joint Vision 2010* rationale the requirement for increasing the political utility of U.S. armed forces by significantly reducing the risks and costs associated with their employment.

The two approaches also agree that U.S. systems must be effective against a more diverse array of often asymmetric threats ranging from crude, low-cost counters to high technology weapons systems, to limited numbers of technologically sophisticated systems, which will include WMD. For large scale, conventional warfare, this will lead to higher tempo, increasingly lethal warfare. At the same time, however, U.S. force protection will be enhanced by passive defensive measures such as stealth, dispersion, and increased battlefield agility.

Finally, there are several areas in which the three-tier assessment and *Joint Vision 2010* agree in principle, but differ in the scope or precise nature of the capabilities needed. These include the need for more effective theater missile defenses, development and fielding of a national missile defense system, the need to exploit technology to detect chemical and biological agents, and the need to be able to conduct effective coalition operations. The similarity of the capabilities indicated by the two approaches tends to affirm *Joint Vision 2010*, in many respects. The differences, however, reveal that the vision provides only a partial template of armed forces the nation will require in the 21st century.

Dissimilarities.

The difference between the future force capabilities suggested by the three-tier assessment and those indicated by the Chairman's vision stem, primarily, from two fundamental characteristics of the *Joint Vision 2010* force. First, it is not a new force designed for a new national security environment or strategy.¹³⁷ It is a smaller, albeit improved, version of the force with which the United States emerged from the Cold War.¹³⁸ Second, true to its Cold War heritage, the force predominantly is

a large-scale, conventional warfare, "fight and win" force. The force envisioned by the three-tier assessment would be a new force for the national security environment of the future that preserves the warfighting essence of the *Joint Vision 2010* force, but differs from that force in several significant respects.

Joint Vision 2010 accepts as self-evident a conventional wisdom that the most important task of the U.S. armed forces is to deter and, when necessary, to fight and win the nation's wars.¹³⁹ Based on that premise, the vision concludes that forces should be "optimized" to fight and win wars because if they can do that, it is "possible" for them to accomplish other tasks.¹⁴⁰ Understandably, this rationale went largely unchallenged during the Cold War. During that period, the Soviet bloc was not only capable of threatening the survival of the United States, but communicated that threat in many ways. The recession of the Soviet threat, however, cast doubt on the validity of the premise and its derivative conclusion about force design. Informed people began questioning the utility of a focused "fight and win" force, indicating that greater flexibility is needed in the post-Cold War era,¹⁴¹ where the prevalent use of the U.S. armed forces is for operations other than war. Still, it is no surprise that the *Joint Vision 2010* force, originally conceived during the Cold War, would continue to require as its legitimizing basis the Cold War premise that fighting and winning the nation's wars is the most *important* task assigned to the U.S. military.

The three-tier assessment acknowledges the importance of retaining a large-scale conventional warfighting capability but considers fighting wars to be inefficient by definition. The three-tier assessment also suggests that the measure of the relative importance of maintaining a large-scale conventional warfighting capability continues to be a function of two variables, the values of which will be considerably different during the 21st century. The first variable is the extent to which the "fight and win" force relates to fundamental national interests. The relevance of the "fight and win" force to the active promotion of U.S. interests will be less clear than its relationship to the defense of the nation and its interests through deterrence and victory in war.

The importance of forces optimized to fight and win large-scale conventional wars, however, also hinges on a second variable: the likelihood that such forces will actually be needed. The three-tier assessment concludes that large scale military threats to fundamental U.S. interests will arise far less frequently than crises of lesser concern.¹⁴² Additionally, and perhaps more important, the three-tier assessment concludes that opportunities to promote U.S. interests and to prevent conflict will be plentiful and, if seized upon, will reduce even further the likelihood of large-scale military threats. The

three-tier assessment considers threat control through preventive defense measures to be more efficient than deterring or defeating threats once they arise. The three-tier assessment posits that the more U.S. forces are used effectively and efficiently to promote U.S. interests and prevent conflict conditions from developing, the less likely it will be that the inefficient application of U.S. armed forces to fight and win wars will be required.

This basic philosophical difference between the two approaches to determining the military forces needed in the future results in the overarching difference in the forces suggested. While *Joint Vision 2010* seeks a more effective and efficient fighting force, the three-tier assessment calls for a more versatile, balanced, and usable force overall. Recognizing the need to maintain forces capable of hedging against large-scale conventional military threats, the three-tier approach suggests that the future security environment and technology will permit innovative ways of doing so. Specifically, the three-tier approach argues that the cost of providing the hedge can be reduced significantly to an acceptable level of risk. This would allow the diversion of scarce defense resources to the development of capabilities better suited for the more prevalent military missions of the 21st century.

The three-tier approach provides a two-part justification for the refocus of resources. First, it argues that operations short of war will be the most likely applications of military forces in the future. Second, the assessment points out that those activities which help shape the international security environment and provide for preventive defense also will be the more efficient uses of the U.S. armed forces. The three-tier assessment suggests that future forces should be designed to provide maximum return on investment by performing their most prevalent tasks effectively and efficiently, while possessing sufficient flexibility to hedge against large-scale conventional threats. This overall force capability dissimilarity encompasses several specific differences.

Both *Joint Vision 2010* and the three-tier assessment acknowledge the importance of advanced technology to future military operations. The approaches differ, however, in the relevance, efficacy, and, thus, the emphasis that should be placed on technologies such as long-range targeting and precision strike, high-energy weapons, electro-magnetic technology, information dominance, and similar warfighting enhancements. *Joint Vision 2010* considers those technologies as prime contributors to a system of systems¹⁴³ which will synergistically increase the ability of the U.S. armed forces to deter potential adversaries, and if necessary, to compel them to accede to U.S. will.

The three-tier assessment anticipates the use of advanced technologies to provide a largely asymmetric hedge against aggression by Second Tier states. However, the three-tier assessment also calls for the exploitation of technology to increase the U.S. ability to conduct effective and efficient military operations short of conventional warfare within all three tiers.

Joint Vision 2010 views defensive information warfare as applying to the protection of military information systems and capabilities. The three-tier approach, on the other hand, concludes that the U.S. military should redefine its responsibilities for information warfare to include the "common defense"¹⁴⁴ of a broader range of U.S. national information systems from foreign attack, intrusion, or exploitation. Thus, the three-tier approach calls for the U.S. armed forces to develop far more robust information warfare capabilities, including the ability to warn against, detect, defend against, repel, and retaliate against information attacks from foreign sources.

The three-tier assessment supports the development of national missile defenses, exportable national missile defense systems, and deployable theater missile defenses. The assessment concludes that employment of such systems will provide the only effective protection from WMD by deterring and, if necessary, defending against both rational and irrational actors. Additionally, the three-tier assessment suggests that national and theater missile defenses will allow for more effective stemming of the proliferation of missile technology and WMD that otherwise will continue unabated. *Joint Vision 2010* appears to favor development of national missile defenses but only briefly addresses the subject in a noncommittal fashion.¹⁴⁵ It stops short of advocating the comprehensive common missile defenses supported by the three-tier assessment.

Additionally, the three-tier assessment calls for new strategic concepts for combatting foreign terrorist and organized crime threats to U.S. interests. While *Joint Vision 2010* does not acknowledge antiterrorism or counterterrorism as military missions beyond the context of protecting U.S. forces,¹⁴⁶ the three-tier assessment views terrorism as an asymmetrical form of warfare deserving special attention and international organized crime as a special form of terrorism. The three-tier assessment concludes that defense of the nation from terrorism and international crime are missions shared by the U.S. armed forces and other government agencies and offers strategic concepts for their accomplishment.

While *Joint Vision 2010* views the future relevance of

Reserve Component forces in terms of their responsiveness to unexpected crises, the three-tier approach proposes a role for the reserves as the ultimate defenders of fundamental U.S. interests. Thus, the three-tier assessment suggests that cost avoidance, increased warning, and mobilization agility will call for the bulk of U.S. heavy combat capability to reside in the reserve components.

Joint Vision 2010 describes advantages that will accrue to the U.S. armed forces through the application of information technology to existing weapons systems. The result will be more effective, and perhaps more efficient, systems which combine synergistically to increase the U.S. armed forces' combat capability. The three-tier assessment, however, recognizes the increasing need for military systems as capable of conflict prevention and mitigation as they are of winning wars.¹⁴⁷ The three-tier assessment calls for new, not merely improved military systems, which are fewer in number but highly capable across a wide range of missions. Additionally, the three-tier assessment envisages new, flexible organizations made possible by new, rapidly reconfigurable, multi-role systems. Those systems may be combined in various proportions at lower organizational levels to provide better customization of capabilities for any type of military mission. The three-tier assessment, therefore, suggests that new, more versatile and useful armed forces will be required.

While *Joint Vision 2010* views the application of advanced technology critical for future strike warfare, it considers technology to be less important for military operations in difficult terrain such as urban areas.¹⁴⁸ The three-tier assessment, on the other hand, suggests that potential adversaries will seek refuge and conduct operations within urban areas to exploit First Tier aversion to civilian casualties and collateral damage. The three-tier assessment, therefore, counsels that appropriate advanced technologies must be pursued to deny adversaries such opportunities.

Because of its focus on warfare, *Joint Vision 2010* does not elaborate on the application of the U.S. armed forces to prevent conflict conditions from arising. The three-tier assessment, however, emphasizes the use of U.S. armed forces to develop military-to-military contacts, provide timely response to disasters and humanitarian relief situations, and conduct continual nation assistance in unstable regions to preclude the social and political unrest which give rise to conflict.

Like *Joint Vision 2010*, the three-tier assessment recognizes the danger that asymmetrical counters may pose to high technology U.S. military systems. But the three-tier assessment also suggests that the United States should pursue asymmetrical

capabilities of its own to counter the large conventional forces of Second Tier states and to keep the U.S. costs of intervention as low as possible.

The three-tier assessment goes beyond *Joint Vision 2010*'s acknowledgement of the need for multinational operations.¹⁴⁹ It suggests that the United States must take special care to ensure that its advances in military capabilities do not create interoperability gaps with allies and potential coalition partners. The three-tier assessment suggests selective sharing of technology to enhance interoperability while subsidizing the U.S. research and development base. The three-tier assessment also recognizes the need for greatly increased military-to-military contacts between U.S. forces and the forces of all three tiers.

The similarities and differences of the force requirements suggested by the three-tier assessment and *Joint Vision 2010* indicate that the Chairman's vision provides a necessary step in the evolution of the U.S. armed forces. *Joint Vision 2010* qualitatively moves the U.S. military beyond its Cold War heritage. The three-tier assessment suggests some of the military capabilities that will be required to move the U.S. armed forces beyond the post-Cold War era and prepare them for the security environment of the 21st century.

CONCLUSIONS

The three-tier approach to viewing the international security environment that will succeed the post-Cold War period provides a useful framework for determining the broad outlines of a national security strategy for the early 21st century. The approach also provides a practical basis for developing the military components of the strategy. By doing so, it facilitates identification of the military capabilities that the United States will require if U.S. armed forces are to provide for the common defense and promote the general welfare into the 21st century.

The contours of the 21st century international security environment are fairly discernable today, as is the domestic context within which the United States will frame its national security interests and strategy. Additionally, the technological opportunities and limitations regarding force design and the potential capabilities of the early 21st century U.S. military are equally visible. Clearly, extraordinary technological and geopolitical surprises could obviate the analysis presented herein. That eventuality, however, need not inhibit timely force planning based on what is currently foreseeable.

A comparison of the three-tier assessment to the tenets of *Joint Vision 2010* clearly shows that the force capabilities

suggested by the Chairman's vision are appropriate and necessary for the post-Cold War period, and many will be applicable well into the 21st century. It is equally clear, however, that as the international security environment emerges from the post-Cold War period, the U.S. armed forces must continue to evolve to serve better the needs of the nation. The foregoing analysis both confirms the continued relevance of many *Joint Vision 2010* force capabilities and suggests several needed force modifications beyond those indicated by the Chairman's vision.

The three-tier assessment confirms *Joint Vision 2010* in several significant respects. Nonetheless, due to its nearly exclusive focus on large-scale conventional warfare, *Joint Vision 2010* is only a partial template for developing the military capabilities that will be needed in the 21st century. To be sure, as long as there are large Second Tier industrial armed forces that could potentially threaten fundamental U.S. interests, the United States must possess countercapabilities. The nature of these capabilities, however, cannot be a function solely of the magnitude of potential threats but also must take into account the likelihood of the threats materializing.¹⁵⁰

To hedge against potential Second Tier and First-Second Tier hybrid threats, the United States should continue to refine the force capabilities described in *Joint Vision 2010*, evolving those forces into smaller, more lethal asymmetrical counters to large, conventional Second Tier forces.¹⁵¹ To accommodate fiscal realities and take advantage of increased production agility and training innovations, the bulk of U.S. symmetrical conventional warfare capabilities should be shifted to the Reserve Components.¹⁵²

The U.S. asymmetrical counter-conventional capabilities maintained in active status should be smaller but more lethal high-technology forces capable of denying Second Tier aggressors their objectives long enough for U.S. symmetrical capabilities to be brought to bear. The Active Component must also contain multi-mission capable forces to shape the international security environment, prevent conflict conditions from arising, and, if necessary, add asymmetrical capabilities to deter or compel an aggressor.

These multi-mission capable forces, equipped with multi-role systems, should be differentiated at a lower organizational level, perhaps at what is currently referred to as the battalion or squadron level. They must be structured into very flexible units that can be rapidly aggregated in various proportions for customized, mission oriented application. Finally, they must serve a national security strategy that contemplates the early and full integration of military capabilities with the other instruments of national power in the active furtherance of U.S.

national security interests.

If the U.S. armed forces are to continue to provide for the common defense, DoD must be assigned responsibility for defending key national information systems from foreign attack. In the 21st century, it will make no more sense to require separate government agencies, corporations, or the American public to provide their own defense from foreign information attacks than it would be to require them to protect themselves from nuclear attacks. DoD, therefore, must develop large-scale, offensive and defensive information warfare capabilities.

National security strategy must evolve beyond the strategic nuclear deterrence of the Cold War. Only through a combination of strategic deterrence, common strategic and theater missile defenses, new preemptive and defensive approaches to eliminating the threat of WMD terrorists, and diplomatic initiatives will WMD lose their political appeal. Until these concepts are woven into a comprehensive strategy, proliferation of WMD and delivery methods will not be stanchd.

Technology must be exploited not only to increase the lethality of military forces but also to improve their abilities to aggressively promote U.S. interests and prevent conflict conditions from developing. The political utility of the military instrument of national power must be increased by lowering the costs of intervention in terms of fiscal resources, people, and domestic and international political capital. Technology also must be pursued to counter adversary asymmetric strategies such as intermingling of combatants with noncombatants in urban areas, limited use of high technology systems, strategic employment of terrorism, and intentional disregard for the international laws of armed conflict. Finally, selected technology must be shared with allies and potential coalition partners to ensure interoperability of military forces.

If not prevented, terrorists armed with WMD will seriously threaten fundamental U.S interests in the 21st century. The United States, in concert with other nations, must develop a comprehensive strategy for dealing with such terrorists. The strategy should include robust preemptive as well as defensive capabilities. The U.S. armed forces and domestic law enforcement agencies must have clearly defined antiterrorism and counterterrorism roles, whereby the armed forces have lead responsibility for preventing terrorism from reaching U.S. soil, and law enforcement agencies have primary authority for dealing with terrorism within U.S. borders.

Given its technological preeminence and diverse society, the United States is in a unique position to develop a new global intelligence network to replace the remnants of its Cold War

predecessor. This new intelligence organization will be needed to give meaning to the vast amounts of information that will be available in the 21st century, provide for early detection of emerging conditions which if left untreated would lead to conflict, permit advance discernment of the intentions of potential adversaries, and provide increased strategic warning.

The complexity and dynamism of the 21st century international security environment will not allow for imprecise national security policy. All of the instruments of national power must be integrated to produce unprecedented synergy if the United States is to become more competitive within the First Tier, appropriately hedge against and mitigate Second Tier threats, prevent unfavorable situations from developing within the Third Tier, and take advantage of every opportunity to actively promote U.S. interests around the globe.

While the three-tier construct of the future international security system used as the basis for this analysis facilitates military force planning efforts, it may not prove to be a universally applicable construct. Regardless, however, of the specific contours of the international security environment that actually emerge in the 21st century, they will undoubtedly feature wide varieties of conflicts and opportunities. The analysis provided in this report should highlight to American national security strategists, political leaders, and military strategists issues that should be considered in making the decisions which will shape the U.S. armed forces of the 21st century.

ENDNOTES

1. The U.S. National Security Strategy seeks the optimal blend of the instruments of national power to further U.S. national security. The instruments of national power include economic power, diplomatic power, informational power, and military power. In the U.S. case, the broad strategic concepts for applying the military element of national power can be found in the National Military Strategy. John M. Shalikashvili, *National Military Strategy of the United States of America*, Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, February 1995, p. i.

2. The *Project 2025* study conducted under the guidance of Admiral David Jeremiah, former Vice Chairman of the Joint Chiefs of Staff, is a case in point. Although the Project 2025 report was supported by excellent research and logically derived its conclusions from the research, it had little, if any, impact on the U.S. armed forces. First, its time horizon was too far into the future—30 years. The report's insights did not relate to contemporary decisionmaking needs and, therefore, motivated no

action by senior leaders. Second, many of the report's observations such as "pop-up warfare," "fire ant warfare," and nano-technology could not be envisaged by contemporary decisionmakers. They could not visualize a bridge from the current armed forces to those potentially required for the year 2025. In short, the report, although extremely interesting, was neither timely nor relevant to contemporary decisionmaking. Alvin H. Bernstein, *et al.*, *Project 2025*, National Defense University, Washington, DC: Institute for National Strategic Studies, November 1991, *passim*.

3. See, for example, John M. Shalikashvili, *Joint Vision 2010*, Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, undated, *passim*; and Dennis J. Reimer, *Army Vision 2010*, Washington, DC: Office of the Chief of Staff of the Army, undated, *passim*.

4. Edward Cornish, "The Futurist Forecasts 30 Years Later," *The Futurist*, Vol. 31, No. 1, January-February 1997, pp. 45-48.

5. George Orwell, *Nineteen Eighty-Four: A Novel*, New York: Harcourt, Brace, 1949, *passim*.

6. Dr. Steven Metz, Professor of Strategic Research at the U.S. Army Strategic Studies Institute, suggests that nonstate or substate militaries are inclined to be less hidebound and, by necessity, are more creative than national militaries. Consequently, those alternative militaries could precipitate a revolution in military affairs of sorts.

7. Preamble to the *Constitution of the United States*.

8. The current national security strategy rests upon two pillars: the protection of U.S. interests and the active promotion of U.S. interests by taking advantage of "unprecedented opportunities to make our nation safer and more prosperous." William J. Clinton, *A National Security Strategy of Engagement and Enlargement*, Washington, DC, The White House, February 1996, p. i. Also, the Secretary of Defense has recently articulated a strategy for the future called "Preventive Defense" which calls for actions to prevent threats from emerging, to deter those that do, and to defeat those that are not deterred. Press release No. 278-96, "Remarks as Prepared for Delivery by William J. Perry, Secretary of Defense, to the John F. Kennedy School of Government, Harvard University," Washington, DC: Office of the Secretary of Defense, May 13, 1996, pp. 3-11. Also see John P. White, "Preventive Defense—Key to Contemporary Defense and Foreign Policy," *TROA National Security Report*, Washington, DC: The Reserve Officers' Association, September 1996, pp. 29-30.

9. Clinton, p. 18.

10. The current Secretary of Defense has endorsed this view by saying that the United States will respond with decisive and overwhelming force when vital interests are threatened. Short of threats to vital interests, however, he is "reluctant to see the [United States] engaged in too many areas." "Cohen Establishing His Doctrine as Clinton and Congress Look On," *Jane's Defense Weekly*, February 5, 1997, p. 19.

11. Seth P. Tillman, *The United States in the Middle East*, Bloomington, IN: Indiana University Press, 1982, p. 268; and David W. Lesch, *The Middle East and the United States*, Boulder, CO: Westview Press, 1996, p. 282.

12. William Neikirk and Steve Daily, "Speech Is Blunt About High Risks," *Chicago Tribune*, November 28, 1995, p. 1.

13. Stephen S. Rosenfeld, "The National Interest Test," *Washington Post*, July 26, 1996, p. 22.

14. Of course, the utility of predesignating interests as vital should not be completely ignored. It has the effect of establishing priorities for planning and, to some extent, for resource allocations.

15. Maslow's theory, which has been widely accepted, is that humans will seek satisfaction of their needs in a hierarchical fashion. According to the theory, higher order needs such as economic well-being and self-actualization will not be pursued until lower order needs such as physical security and safety are assured. See, Abraham H. Maslow, *Motivation and Personality*, 2nd ed., New York: Harper and Row, 1970, pp. 35-58.

16. Much of this section is derived from Dr. Steven Metz, *Strategic Horizons: The Military Implications of Alternative Futures*, Carlisle Barracks, PA: Strategic Studies Institute, March 7, 1997, pp. 25-36. Dr. Metz posits other future security systems including: (1) one where most armed conflict is caused by traditional power politics as nation-states pursue sometimes incompatible national interests or misperceive the intentions of other nation-states, (2) one where a renaissance of transnational ideologies leads to armed conflict, (3) one where armed conflict arises from the global collapse of internal order, and (4) one where intense competition for resources and markets leads to armed conflict. This study does not consider Dr. Metz's other systems as "alternatives" but as factors which potentially may impact the basic three-tier system.

17. See, for instance, Stuart E. Johnson and Martin C. Libicki, *Dominant Battlespace Knowledge: The Winning Edge*, Washington, DC: National Defense University Press, 1995; Martin

C. Libicki, *The Mesh and the Net: Speculations on Armed Conflict in a Time of Free Silicon*, Washington, DC: National Defense University Press, 1994; and Barry R. Schneider and Lawrence E. Grinter, eds., *Battlefield of the Future: 21st Century Warfare Issues*, Maxwell AFB, AL: Air University Press, 1995. For a theoretical and historical perspective on the revolution in military affairs, see Steven Metz and James Kievit, *Strategy and the Revolution in Military Affairs: From Theory to Policy*, Carlisle Barracks, PA: U.S. Army War College, Strategic Studies Institute, 1995.

18. Metz, p. 26.

19. *Ibid.*, p. 27.

20. For example, see Con Coughlin, "Iran OKs Campaign of Terror in Europe," *Washington Times*, April 14, 1997, p. 1; and Bill Gertz, "Iran Buys Arms from Russia, Missiles Meant for Terrorists," *Washington Times*, April 16, 1997, p. 1.

21. Metz, p. 27.

22. Metz, p. 34.

23. Bill Gertz, "U.S. Commander in Gulf Sees Increased Threat from Iran," *Washington Times*, January 29, 1997, p. 5. Also see Martin Sieff, "U.S. Decides to Continue Iran-Iraq 'Containment'," *Washington Times*, January 28, 1997, p. 14.

24. Evidence of the increasing tension between international agreements and national sovereignty is provided by the U.S. debate over ratification of the Chemical Weapons Convention treaty. See, for example, John Yoo, "The Chemical Weapons Treaty Is Unconstitutional," *Wall Street Journal*, April 16, 1997, p. 19.

25. In fact, some First Tier states will find no contradiction in maintaining military alliances with the United States while simultaneously waging economic warfare that includes economic espionage. Bill Gertz, "FBI Official Says Friends, Foes Spy on U.S. Business," *Washington Times*, April 22, 1997, p. 6.

26. Federal Bureau of Investigation Director Louis Freeh recently testified to Congress that economic espionage directed against U.S. companies by foreign governments, friends and foes alike, is increasing, and that American corporations are not equipped to defend against that kind of attack. Frank Swoboda, "Economic Espionage Rising, FBI Director Tells Congress," *The Washington Post*, February 29, 1996, p. D11. The foreign governments that the Central Intelligence Agency believes conduct economic espionage against the United States include France, Israel, China, Russia, Iran, and Cuba. Paul Blustein, "France,

Israel Alleged to Spy on U.S. Firms," *The Washington Post*, August 16, 1996, p. A28. Additionally, there is evidence that the United States may engage in economic espionage against other First Tier states. Matt Marshall, "U.S. Withdraws Diplomat Germany Accused of Spying," *Wall Street Journal*, March 10, 1997, p. 4. Also see Bill Gertz, "FBI Official Says Friends, Foes Spy on U.S. Business," *Washington Times*, April 22, 1997, p. 6.

27. The initial U.S. Government response to this threat has been to encourage the use of coded international exchanges of information. Critics believe this limited measure will prove insufficient to protect commercial trade secrets. Albert R. Karr, "Administration Moves Toward Encryption Plan," *Wall Street Journal*, July 15, 1996, p. 1, B4.

28. Recognizing the future importance of international economic competition, President Clinton, in 1992, established the National Economic Council to perform functions analogous to those of the National Security Council. To date, the importance and efficacy of the council have received mixed reviews. See, for example, David Wessel, "Clinton's National Economic Council Gets Influential Think Tanks Blessing," *Wall Street Journal*, November 8, 1996, p. 5E; Thomas G. Donlan, "Shrinking Government; Seize the Opportunity to Abolish the National Economic Council," *Barrons*, November 18, 1996, p. 74; and David E. Sanger, "Seeking a Leader and a Role for the National Economic Council," *New York Times*, December 8, 1996, p. 1.

29. Bill Gertz, "Spies Use Internet to Build Files on U.S.," *Washington Times*, January 3, 1997, p. 5.

30. Thomas E. Ricks, "Information Warfare Defense Is Urged," *Wall Street Journal*, January 6, 1997, p. 1, B2. Also see, Sheila Foote, "Nunn Suggests National Information Security Policy," *Defense Daily*, October 18, 1996, p. 104.

31. R. Jeffery Smith, "CIA Gears Up to Thwart Information Attacks," *Washington Post*, June 26, 1996, p. 19.

32. Information attacks that the United States must defend against will not be limited to those mounted by rogue "hackers." Foes on the information battlefield will be both familiar and formidable. For example, see Stan Crock, "We Will Cyber-Bury You," *Business Week*, April 21, 1997, p. 6.

33. *Ibid.*

34. Reflecting the ambiguity of DoD's roles in defending the nation from information and other terroristic attacks, the U.S. Defense Science Board recently established a task force to study evolving DoD roles. Stacey Evers, "US DoD Sets Up Study of

Transnational Terrorism," *Jane's Defense Weekly*, February 26, 1997, p. 8.

35. The Defense Science Board Task Force on Information Warfare-Defense made a similar observation. "U.S. Report Stresses Threat of C³I Hack Attacks," *Jane's Defense Weekly*, January 15, 1997, p. 7.

36. Current indicators suggest that the scope of this responsibility will be enormous. For example, the Government Accounting Office reported that in 1995 "malicious attacks on government computers put billions of dollars worth of assets at risk of loss and vast amounts of sensitive data at risk of unauthorized disclosure." For example, there were 250,000 attacks on DoD systems, 64 percent of which were successful. Stephen Barr, "Identifying Risky Programs," *Washington Post*, February 13, 1997, pp. 1, 23.

37. The need for increased information warfare capabilities within the U.S. armed forces has been noted. For example, see Martin Libiki and James A Hazlett, "Do We Need an Information Corps?" *Joint Forces Quarterly*, Autumn 1993, pp. 88-97. However, few authors have addressed the appropriate scope of the U.S. military's information warfare capabilities.

38. Interestingly, the Clinton administration has analogized the development of defenses for U.S. information systems to the Manhattan Project. M.J. Zucherman, "Cybersecurity Plan Labeled Urgent," *USA Today*, July 17, 1996, pp. 1-2.

39. Shalikhshvili, p. 4.

40. The temptation and dangers associated with strategic over-extension are illuminated in Robert W. Tucker, *The Imperial Temptation: The New World Order and America's Purpose*, New York: Council on Foreign Relations Press, 1992.

41. The current administration's recognition of this concept is summarized in Vago Muradian, "New Cohen Policy Demands Greater International Cooperation," *Defense Daily*, March 31, 1997, p. 495.

42. Current U.S. efforts to increase collaboration with allies on major defense systems is a step in the right direction. Gigi Whitley, "Cohen Pushes for DOD Collaboration with Allies on Major Defense Systems," *Inside the Air Force*, May 2, 1997, p. 3.

43. Sheila Foote, "Stevens: Controls Needed on DoD Operations Spending," *Defense Daily*, February 28, 1997, p. 311.

44. Additional discussion of this point is provided in

Steven Metz, *Technological Asymmetry and Coalition Operations: Problems and Solutions*, unpublished manuscript, Strategic Studies Institute, Carlisle Barracks, PA, 1997, pp. 10-11.

45. The concept of extended nuclear deterrence requires the United States to maintain the capability and display the intent to retaliate on behalf of a non-nuclear state for an attack upon it by a nuclear armed state or proxy. U.S. retaliation may include employment of its nuclear arsenal.

46. Shalikashvili, p. 10.

47. With regard to means of delivery for example, there is, reportedly, overwhelming evidence that Russia has already supplied Iran with the technology necessary to build a nuclear-capable missile with a range of 1,250 miles. Robin Wright, "Russia Warned on Helping Iran Missile Program," *Los Angeles Times* (Washington ed.), February 12, 1997, p. 1. There also are reports that Russian experts are in Iran assisting in the development of long-range ballistic missiles capable of carrying weapons of mass destruction. "Iranian Missile Has 930-Mile Range," *Washington Times*, April 14, 1997, p. 13.

48. For example, see Amy Dockser Marcus, "Growing Dangers, U.S. Drive to Curb Doomsday Weapons in Mideast Is Faltering," *Wall Street Journal*, September 6, 1996, p. 1; "U.S. Accuses Bonn Atom Aid Helping Iran Develop Bomb," *Baltimore Sun*, September 26, 1996, p. 21; Bill Gertz, "Beijing Flouts Nuke-Sale Ban," *Washington Times*, October 9, 1996, p. 1; Gertz, "Russian Renegades Pose Nuke Danger," *Washington Times*, October 22, 1996, p. 1; Gertz, "Albright Concedes 'Concern' Over China-Iran Transfers," *Washington Times*, January 24, 1997, p. 6; and Con Coughlin, "Albright Says Iran Poses Nuclear Threat," *Washington Times*, February 24, 1997, p. 1.

49. Fred C. Ilke, "Naked to Our Enemies," *Wall Street Journal*, March 10, 1997, p. 18.

50. For example, U.S. House of Representatives' Speaker Newt Gingrich recently said that U.S. developed missile defenses are "a critical component of our own security, and of the security of Japan and all our allies." Joseph Owen, "Gingrich: Missiles Vital to Asia," *Pacific Stars and Stripes*, April 3, 1997, p. 1.

51. These features might include anti- or counter-satellite weapon systems, weapons of mass destruction, pre-deployed terrorists and saboteurs, anti-information system weapons, and other high-leverage, low density capabilities.

52. The emergence of what has been termed a "peer competitor" of the United States within the next 20 years is a

remote possibility, if defined as a state which will compete globally with the United States economically, diplomatically, culturally, and militarily.

53. For example, there is growing concern that diminished control of Russian nuclear forces could result in accidental, unauthorized, or ill-advised strategic attack on the United States. Bruce W. Nelan, "Nuclear Disarray," *Time*, May 19, 1997, p. 46, and Bill Gertz, "Mishap Put Russian Missiles in 'Combat Mode'," *Washington Times*, May 12, 1997, p. 1.

54. Evidence is emerging that indicates Russia intends to collaborate and cooperate with China to form a Sino-Russo-led counterbalance to the U.S.-led Western bloc of nations. Early indications suggest that China considers strengthened relations with Russia to be in China's interests. Martin Sieff, "U.S. Frets as China, Russia Get Closer," *Washington Times*, December 18, 1996, p. 15; Bill Gertz, "China's Arsenal Gets a Russian Boost," *Washington Times*, May 20, 1996, p. 1; Tony Walker, "China, Russia Cozy Up to Offset U.S. Influence," *Washington Times*, April 22, 1997, p. 11; and Lee Hochstader, "Russia, China Sign New Friendship Pact," *Washington Post*, April 24, 1997, pp. 1, 27.

55. Symmetrical engagements are between similar types of forces where superior numbers, training, leadership, and technology largely determine the outcome. Asymmetrical conflict is between dissimilar forces which can be extremely devastating to a force not prepared to defend against the type of force by which it is attacked. John M. Shalikashvili, *Joint Pub 1, Joint Warfare of the Armed Forces of the United States*, Washington DC: U.S. Government Printing Office, January 10, 1995, pp. iv-10, iv-11.

56. The recent visit of General John Shalikashvili, Chairman of the Joint Chiefs of Staff, to China set the stage for increased contacts between the U.S. and Chinese militaries. "Top U.S. General Visits China," *Washington Times*, May 13, 1997, p. 15.

57. For example, see Patrick E. Tyler, "Control of Army Is Crucial Issue for China Rulers," *New York Times*, February 23, 1997, p. 1; Richard Halloran, "The Power of the People's Army," *Boston Globe*, February 23, 1997; and "Russian Military," *USA Today*, February 7, 1997, p. 10.

58. Chris Morris, Janet Morris, and Thomas Baines, "Weapons of Mass Protection," *Airpower Journal*, Vol. IX, No. 1, Spring 1995, pp. 25-29.

59. Martin van Creveld, "Modern Armies: Dinosaurs of Defense," *Los Angeles Times* (Washington ed.), July 30, 1996, p.

11.

60. An initial approach to the concept of employing strike systems from their peacetime locations is the proposed arsenal ship which would fire missiles and possibly rockets and cannons from a clandestine forward deployed position. Charles Aldinger, "Remote-Control Warship Planned," *Philadelphia Inquirer*, July 16, 1996, p. 5. Other approaches may include space-based weapons and highly accurate but inexpensive long-range missiles armed with conventional payloads. Jennifer Heronema, "Air Force Space Chief Calls War in Space Inevitable," *Space News*, August 12-18, 1996, p. 4.

61. The concept of true industrial agility is in its early stages of development and implementation. It was spawned by industry's need to accommodate a world of niche markets and rapidly changing demands for products. The U.S. Government has been encouraging the concept's development through agencies such as the National Science Foundation and the Advanced Research Projects Agency. David Mutch, "Making Multiple Products Is a Snap if Company Is Agile," *Christian Science Monitor*, March 29, 1996, p. 8. Agile industry, *inter alia*, will be able to bring complex products to market rapidly, design easily reconfigurable and upgradable products, produce a continually changing array of product models, and create long-term producer-customer relationships. John H. Sheridan, "Where Is the Agility Game Plan?," *Industry Week*, Vol. 244, No. 14, July 15, 1996, pp. 50-52. Also see Brian S. Moskal, "Son of Agility," *Industry Week*, Vol. 244, No. 10, May 15, 1995, pp. 12-17; and Raymond Serafin, "Automakers Steer to Agile Marketing," *Advertising Age*, Vol. 66, No. 14, April 3, 1995, pp. S2, S32.

62. Among the training innovations that will figure prominently in the strategy will be virtual reality, high fidelity simulators, digitized terrain data bases, and distributed cyberspace exercises, of whatever size required, encompassing geographically separated units. The draft *Concept for Future Joint Operations* prepared by the Joint Warfighting Center on behalf of the CJCS envisions "training—probably in a 3-D multi-sensory virtual environment" made possible by "wide-band terabyte data-transfer and data-processing capability, 3-D immersion, and fully interactive training systems." Hal M. Hornberg, *Concept for Future Joint Operations*, preliminary draft, Joint Warfighting Center, March 21, 1997, p. 21. Concepts of strategic mobility must be developed which go beyond the centuries-old reliance on surface shipping. New, in-ground-effect, surface-skimming vessels capable of deploying large, bulky armored and mechanized units at speeds in excess of 100 knots, and which do not require extensive port facilities can provide much of the 21st century answer to strategic mobility and agility challenges.

63. This point was reemphasized recently by the Iranian supreme leader Ayatollah Ali Khamenei when he proclaimed to the cheers of assembled Iranian masses that if the United States launched a punitive attack on Iran in response to the Khobar towers bombing, the "[attack] would only make this nation more steadfast and increase its enmity towards America" "Iranian Leader Warns U.S. Against Contemplating Attack," *Gulf News* (United Arab Emirates), February 1, 1997, p. 4.

64. As used in this study, conventional escalation dominance refers to the ability and intent of one state to increase another state's costs of aggression to the extent that the aggressing state is dissuaded from pursuing its aggression.

65. Exacerbating this potential for increased urban warfare is the United Nations' projection that by the year 2005, one-half of the world's population will reside in cities. "Growing Urbanization Increasing Poverty, U.N. Says," PanAfrican News Agency, electronic news-wire, October 26, 1996.

66. Current efforts to improve the ability of U.S. forces to rapidly distinguish friend from foe at extended ranges and during periods of limited visibility are necessary but will prove insufficient. U.S. forces also will require increased ability to distinguish combatants from noncombatants, particularly in situations where the combatants purposefully intermingle with, and disguise themselves as, noncombatants.

67. For a further, although inexhaustive, discussion of this subject, see Ralph Peters, "Our Soldiers, Their Cities," *Parameters*, Vol. 26, No. 1, Spring 1996, pp. 45-48.

68. Declared nuclear powers are the United States, China, Russia, United Kingdom, and France. Undeclared nuclear powers include Israel, India, and Pakistan. States attempting to develop or otherwise acquire nuclear weapons include Iraq, North Korea, Libya, Iran, and Taiwan. States clearly capable of developing nuclear arsenals but which have refrained from doing so include Japan, Canada, and Germany. William Orozdiak, "Nuclear Watchdog Seeks More Bite," *Washington Post*, June 10, 1996, p. 14. This study considers but does not attempt to list states which may have the ability to develop nuclear weapons but apparently have not attempted to do so.

69. The United states also must be concerned with other weapons of mass destruction. For example, China, India, Iran, Iraq, Japan, Libya, North Korea, Pakistan, South Africa, and Syria are suspected of possessing chemical weapons. Linda Peristein, "A Primer on the Chemical Weapons Convention," *Washington Post*, April 24, 1997, p. A20.

70. The Russian Nuclear Energy Minister said recently that Russia will increase its nuclear exports to \$3.5 billion annually by the year 2000. Russia is currently building nuclear plants in China, India, and Iran. "Postscripts," *Wall Street Journal*, January 20, 1997, p. 10. Also see Marcus, p. 1; A.M. Rosenthal, "Only a Matter of Time," *New York Times*, November 22, 1996, p. 31; and "Chinese to Ignore U.S. Nuke Concerns," *Washington Times*, December 2, 1996, p. 11. The threat of terrorists acquiring, over the internet, the technical knowledge of how to construct weapons of mass destruction was underscored recently by the U.S. Secretary of Defense, William S. Cohen. "Internet Terror Threat," *London Financial Times*, April 29, 1997, p. 5.

71. Robert Joseph, "NATO's Response to the Proliferation Challenge," *Strategic Forum*, Washington, DC: Institute for National Strategic Studies, No. 66, March 1996, p. 1-4.

72. Mark Yost, "The Underground Threat," *Wall Street Journal*, July 23, 1996, p. 22. Also, the U.S. intelligence community has warned that since Operation DESERT STORM, "sales of earth-boring equipment have skyrocketed, especially in the Middle East." David A. Fulghum, "Standoff, Penetrating Nuclear Bombs Seen for B-2s," *Aviation Week and Space Technology*, April 7, 1997, p. 38. Also see "Destruction of Bunkers Is New Bomb's Function," *Washington Times*, April 14, 1997, p. 9.

73. William J. Broad, "Nuclear Arms Builders Move from Creators to Custodians," *New York Times*, January 6, 1997, p. 1. Also see, John J. Fialka, "U.S. Investigates Silicon Graphic's Sale of Computers to Russian Weapons Lab," *Wall Street Journal*, February 18, 1997, p. 4; Gary Milhollin, "Rein In Technology Exports," *Los Angeles Times* (Washington Ed.), February 26, 1997, p. 11; and Michael R. Gordon, "Russian Atom Aides Buy I.B.M. Supercomputer Despite U.S. Curbs," *New York Times*, February 25, 1997, p. 7.

74. "NBC Weapons Cannot Be Reliably Destroyed," *Jane's Defense Weekly*, May 14, 1997, p. 8.

75. For example, despite intense U.S. diplomatic efforts that included threats of withdrawing most favored nation trading status, China continues to proliferate chemical, nuclear, and missile weapons technology. Rowan Scarborough, "China Helps Iran Develop Chemical Arms," *Washington Times*, April 11, 1997, p. 1. Interestingly, in spite of the intense nuclear weapons negotiations between the United States and Russia spanning decades, the Russian government still devotes large amounts of scarce national resources to defenses against nuclear attack while bemoaning its financial inability to implement agreed upon nuclear weapons reductions. Bill Gertz, "Moscow Builds Bunkers

Against Nuclear Attack," *Washington Times*, April 1, 1997, p. 1.

76. The future vulnerability of other First Tier states to nuclear attack by rogue states was emphasized recently by the head of Germany's Federal Foreign Intelligence Service. "Missiles May Threaten Europe by 2008," *Washington Times*, February 3, 1997, p. 11. Also see "Iraqi Missiles," *USA Today*, February 28, 1997, p. 7; and Robin Wright, "Russia Warned on Helping Iran Missile Program," *Los Angeles Times* (Washington ed.), February 12, 1997, p. 12.

77. John F. Sopko, "The Changing Proliferation Threat," *Foreign Policy*, No. 105, Winter 1996-97, pp. 4-14.

78. Bill Gertz, "Soviet Nuclear Arsenal Tempts Smugglers," *Washington Times*, June 26, 1996, p. 9. Also see, "Russia Defense Chief Warns on Nuclear Arms," *Washington Times*, February 7, 1997, p. 16, and Bill Gertz, "Rodionov's Armageddon Talk Chalked Up to Angling for Funds," *Washington Times*, February 8, 1997, p. 2.

79. Con Coughlin, "Albright Says Iran Poses Nuclear Threat," *Washington Times*, February 24, 1997, p. 1; Gertz, "Beijing Flouts Nuke-Sales Ban," p. 1, and Dimitri K. Simms, "Russia Still a Bear," *Washington Post*, July 9, 1996, p. 15. Also, Russian nuclear assistance to Iran and Cuba is discussed in Michael R. Gordon, "Russia Selling Atomic Plants to India; U.S. Protests Deal," *New York Times*, February 6, 1997, pp. 1, 3.

80. "Report: Iran Trying to Buy Nuclear Materials Illegally," *Orlando Sentinel*, July 21, 1996, p. 16.

81. For example, see Bill Gertz, "Single Site Missile Defense Leaves Alaska, Hawaii Naked," *Washington Times*, May 9, 1997, p. 8.

82. Paul J. Kaminski, "U.S. Missile Defense: Strategy for the Future," *Wall Street Journal*, January 30, 1997, p. 17; Art Pine, "Candidates Blow Missile Defense Issue Out of Proportion," *Los Angeles Times* (Washington ed.), July 31, 1996, p. 6; and Sheila Foote, "Senate Republicans Make Missile Defense Bill a Top Priority," *Defense Daily*, January 22, 1997, p. 102.

83. For example, North Korea, reportedly, has recently deployed its No Dong missile, which is capable of striking all of South Korea and portions of Japan. "North Korea Has Deployed," *Aviation Week and Space Technology*, April 19, 1997, p. 7. Also see Kevin Sullivan, "N. Korea Has A-Weapons, Defector Quoted as Saying," *Washington Post*, April 23, 1997, p. 23; and Gary Milhollin, "China Cheats (What a Surprise)," *New York Times*, April 24, 1997, p. 35.

84. Chilling evidence of the need for national and theater missile defenses is provided in the foreword to *Jane's Land-Based Air Defense 1997-98*. After discussing Russia's development of a new variant of anthrax toxin which is totally resistant to antibiotics and three new ultra-lethal nerve agents, *Jane's* observed, "[i]t only needs this, or the new chemical nerve agents to be independently discovered by an ostracized nation's scientists and then developed for missile delivery for an Armageddon situation to occur whereby the only reliable retribution may well be overwhelming nuclear response." *Washington Post*, April 4, 1997, p. 17.

85. The Office of Naval Intelligence has recently reported that China will be able to reach the United States with submarine-launched missiles by the year 2007. John Donnelly, "China SLBM Can Target U.S. by 2007, Navy Intel Says," *Defense Week*, April 7, 1997, p. 2. The Chinese threat to hold U.S. cities at risk of missile attack should the United States interfere with China's recovery of Taiwan reveals political vulnerability resulting from the lack of national missile defenses. Patrick Buchanan, "Is Conflict With China Inevitable?" *Washington Times*, April 7, 1997, p. 17. Also see David Briscoe, "China's Missile Capacity is Growing, Pentagon Says," *Philadelphia Inquirer*, April 10, 1997, p. 18.

86. One of the reported promising emerging technologies for theater missile defense is Airborne Laser which could destroy missiles during their initial ascent, while over the territory of the launching country. Michael E. Ruane, "U.S. Looks to Lasers to Destroy Missiles," *Philadelphia Inquirer*, April 8, 1997, p. 1.

87. There are early indications that garnering support among First Tier states for missile defenses will not be easy. Three years of discussions between the United States and Japan, for example, have yet to yield an agreement. Clifford Krauss, "Japan Hesitant About U.S. Antimissile Project," *New York Times*, February 15, 1997, p. 3. On the other hand, however, there seems to be momentum building within NATO for a shared approach to developing missile defenses. Brooks Tigner, "Russians Barter Antimissile Work for Larger NATO," *Defense News*, March 3-9, 1997, p. 1.

88. Former U.S. Senator Sam Nunn assessed proliferation of weapons of mass destruction in combination with terrorism as the United States' highest future national security threat. Carla Ann Robbins and John J. Fialka, "A Step Behind; Despite Tough Words, Antiterrorism Effort in U.S. Is Still Flawed," *Wall Street Journal*, July 22, 1996, p. 1.

89. "Senate Passes Training Measure," *Washington Times*, June 28, 1996, p. 8.

90. Sopko, pp. 3-20.

91. Last year, the U.S. Congress took initial action in this regard by passing the *Defense Against Weapons of Mass Destruction Act*. Ilke, "Naked to Our Enemies," p. 18.

92. Office of the Secretary of State, U.S. Department of State, *Patterns of Global Terrorism 1996*, Washington, DC: Office of the Coordinator for Counterterrorism, April 1997, p. iii.

93. Bruce Hoffman, "Intelligence and Terrorism: Emerging Threats and New Security Challenges in the Post-Cold War Era," *Intelligence and National Security*, Vol. 11, No. 2, April 1996, pp. 207-222, and Bradley Graham, "Bombproof Protection Is Virtually Impossible," *Washington Post*, June 28, 1996, p. 26.

94. Regarding the recent terrorist bombing of the Khobar towers in Saudi Arabia, a senior U.S. military official informed the U.S. news media that U.S. commanders "are bombarded by intelligence reports about possible terrorist attacks and cannot respond to all of them." He said that intelligence reporting is "not under control." George Wilson, "Cohen's Tough Call on Khobar," *Air Force Times*, February 10, 1997, p. 6.

95. For example, advanced hyperspectral and ultraspectral detectors; see "NBC Weapons Cannot Be Reliably Destroyed," *Jane's Defense Weekly*, May 14, 1997, p. 8.

96. Antiterrorism is defined as ". . . Defensive measures used to reduce the vulnerability of individuals and property to terrorist acts, to include limited response and containment by local military forces." Counterterrorism is defined as "[o]ffensive measures taken to prevent, deter, and respond to terrorism." *Department of Defense Directive 2000.12, Subject: DoD Combatting Terrorism Program*, Washington, DC: Office of the Secretary of Defense, September 15, 1996, p. 2-1.

97. Initial steps to provide the antiterrorist intelligence capabilities that will be required in the 21st century can be observed in the Central Intelligence Agency's response to mounting criticism that its intelligence gathering concerning terrorists has been inadequate. The CIA plans to increase the number of U.S. intelligence operatives deployed overseas, employ more foreign informers, and promote the use of covert actions to combat international terrorism. R. Jeffrey Smith, "'Critics Wrong' CIA Chief Says," *Washington Post*, September 6, 1996, p. 21. It is also notable that Japan recently reorganized its intelligence organization. "Japan's New Spy Agency Consolidates Five Units," *Wall Street Journal*, January 21, 1997, p. 14.

98. Bryan Sender, "U.S. May Use Force to Nab Terrorists Overseas," *Defense Daily*, January 31, 1997, p. 156.

99. Note that the head of the U.S. delegation to the July 1996 conference on terrorism held by the seven industrialized nations (G-7) plus Russia was the U.S. Attorney General, not a DoD official. Jonathan C. Randal, "Terrorism Conference Adopts Plan," *Washington Post*, July 31, 1996, p. 15.

100. A consensus is beginning to form that the United States must cease yielding the initiative and carry the fight to the terrorist on U.S. terms. For example, see A.M Rosenthal, "Invitation to Murder," *New York Times*, July 23, 1996, p. 19; "For the Record," *Washington Post*, July 12, 1996, p. 22; and David Morgan, "Gingrich Backs Preemptive Acts on Terror," *Philadelphia Inquirer*, August 21, 1996, p. 11. Also, notable figures are beginning to consider terrorism a new form of warfare. For example, the Chairman of the Joint Chiefs of Staff recently declared terrorism a "new form of war" and directed the establishment of a 36 member counterterrorism task force within the Joint Staff's Operations Directorate (comments made by General John M. Shalikashvili during a Joint Staff Hail and Farewell on October 15, 1996). Director of the FBI, Louis Freeh in his testimony to Congress on August 1, 1996 said the "United States is engaged in 'an increasing war' with terrorists and can expect more terrorist activity in the future." Bill Gertz, "Terror War Growing, FBI Chief Declares," *Washington Times*, August 2, 1996, p. 3. See also Charles Krauthammer, "Declare War on Terrorism—Literally," *Washington Post*, August 9, 1996, p. 17.

101. A.M. Rosenthal, "Invitation to Murder."

102. While the reported capability to successfully attack deep underground facilities using nuclear armaments might be appropriate for nuclear war, it would be inappropriate in a counterterrorist role. Steven Komarow, "B-2s Join Nuclear Fleet; Carry Bomb Designed to Burrow," *USA Today*, April 1, 1997, pp. 1, 6. Consequently, the United States is pursuing an Advanced Concept Technology Development program that focuses on development of conventional weapons to defeat deep underground facilities. Kenneth H. Bacon, DoD News Briefing, Office of the Assistant Secretary of Defense (Public Affairs), April 23, 1996, 1:30 p.m.. Also see, David A. Fulghum, "Standoff, Penetrating Nuclear Bombs Seen for B-2s," *Aviation Week and Space Technology*, April 7, 1997, p. 38.

103. Although counterterrorism and antiterrorism have been considered law enforcement issues, the President has the authority to expand DoD's role. For example, in section 324 of the *Antiterrorism and Effective Death Penalty Act of 1996* (Public Law 104-132), Congress said that "the President should use all

necessary means, including covert actions and military force, to disrupt, dismantle, and destroy international infrastructure used by international terrorists"

104. Former Senator Sam Nunn summed up the fragmented U.S. approach to combatting terrorism by saying, "[e]very agency's got a piece of it, and nobody is really in charge." Robbins and Fialka.

105. Nicholas Horrock, "The New Terror Fear: Biological Weapons," *U.S. News and World Report*, May 12, 1997, p. 36.

106. Evolving DoD thinking in this regard is reflected in comments made by Secretary of Defense William S. Cohen in "Cohen Outlines Need for U.S. Programs to Better Protect Troops," *Washington Times*, April 30, 1997, p. 15. See also John McCaslin, "Too Close for Comfort," *Washington Times*, April 30, 1997, p. 7.

107. For example, nations that currently have or may have chemical weapon arsenals include Angola, Bosnia, Croatia, Egypt, Ethiopia, France, India, Indonesia, Iran, Israel, Japan, Libya, Myanmar, North Korea, Pakistan, Russia, Saudi Arabia, South Africa, South Korea, Syria, Taiwan, Thailand, United States, and Vietnam. "Treaty Isn't Perfect, but It Does Mean Safer World," *USA Today*, February 11, 1997, pp. 1, 10.

108. For example, see Douglas Farah, "Tracing Columbia's Nigerian Connection," *Washington Post*, June 21, 1996, p. A32. Also see, Ralph Peters, "The Culture of Future Conflict," *Parameters*, Vol. XXV, No. 4, Winter 1995-96, p. 21; and Martin van Creveld, *The Transformation of War*, New York: Free Press, 1991, pp. 196-198.

109. For an example of how military forces can facilitate the growth of dynamic economies, see R.J. Kelly, "Pacific Military Boss Takes Long Look at U.S. Future in Asia," *Pacific Stars and Stripes*, February 13, 1997, p. 1.

110. For an illustration of current thinking concerning this strategic concept, see "Warrior Diplomats Role for Special Forces by 2020," *Jane's Defence Weekly*, February 12, 1997, p. 11.

111. Preventive defense is the term used by former Secretary of Defense William J. Perry and others to describe an evolving national security concept by which the United States seeks to prevent threats to its interests from developing. Currently it includes reducing and safeguarding nuclear weapons in former Soviet territories, preventing WMD proliferation, encouraging civilian control of militaries, productively engaging nations that are neither allies nor adversaries, and U.S. participation in humanitarian assistance operations. John Yemma, "Perry, at

Harvard, Issues a Plan for 'Preventive Defense' Strategy, " *Boston Globe*, May 14, 1996, p. 4.

112. A contemporary, albeit prototypical, example of multi-mission capable equipment might be a UH-60 Blackhawk helicopter. It can be rapidly reconfigured from humanitarian assistance roles such as supplying food to refugees or medical evacuation to a combat role where it employs HELLFIRE missiles against enemy tanks. The crews can maintain proficiency at a wide range of missions by "flying" the aircraft simulator.

113. Jeffrey Smith, "FBI Plans to Expand Overseas," *Washington Post*, August 20, 1996, p. 14; Michael Howard, "Combatting Crime and Terrorism: International Solutions," *Vital Speeches of the Day*, Vol. 62, No. 24, October 1, 1996, pp. 741-743; and Tim Wall, "Transnational Crimebusters Agree on New Action Plan," *UN Chronicle*, Vol. 32, No. 1, March 1995, p. 89.

114. DoD's potential future role in combatting international crime is evidenced by the attempt by Columbian drug dealers to purchase a Russian nuclear submarine from a Russian criminal organization. Law enforcement agencies will be ill-equipped to deal with criminal organizations armed with such weapons of war. "Feds: Club Owner Tried to Sell Sub," *Washington Times*, February 7, 1997, p. 6.

115. For an indication of the evolution of U.S. policy in this direction, see Clifford Krauss, "Pentagon to help Peru Stop Drug-Base Shipping on Rivers," *New York Times*, February 3, 1997, p. 3.

116. Operation JUST CAUSE, the 1989 U.S. invasion of Panama, provides a recent precedent for this type of military operation. It should also be noted that current U.S. policy allows for the use of force, without the cooperation of host governments, to remove suspected terrorists from foreign soil. Associated Press, "Policy on Terrorist Suspects Overseas," *Washington Post*, February 5, 1997, p. 28.

117. John M. Shalikashvili, *Joint Vision 2010*, Washington, DC: Office of the Chairman of the Joint Chiefs of Staff, undated, *passim*.

118. William A. Owens, "The Emerging U.S. System-of-Systems," *Strategic Forum*, Vol. 63, Washington, DC: Institute for National Strategic Studies, February 1996, p. 1-2.

119. It is important to note that while Admiral Owens perceived that a revolution in military affairs is underway, General Shalikashvili foresees an evolution in military capabilities. Shalikashvili, *Joint Vision 2010*, Chairman's

signature page and p. 1.

120. Shalikashvili, *Joint Vision 2010*, pp. 6, 8, 30.

121. *Ibid.*, p. 3.

122. *Ibid.*, pp. 4, 17, 25.

123. *Ibid.*, p. 4.

124. *Ibid.*, p. 17.

125. *Ibid.*, pp. 4, 17.

126. *Ibid.*, p. 10.

127. *Ibid.*, pp. 10-11.

128. Future adversaries will likely view the U.S. reliance on space-based information systems as a key vulnerability, if not a strategic center of gravity. Second Tier militaries, therefore, can be expected to devote substantial resources to countering U.S. space systems. Jennifer Heronema, "Air Force Space Chief Calls War in Space Inevitable," *Space News*, August 12-18, 1996, p. 4.

129. Shalikashvili, *Joint Vision 2010*, pp. 14-15.

130. *Ibid.*, p. 16.

131. *Ibid.*, p. 28.

132. *Ibid.*, p. 19.

133. *Ibid.*, pp. 20-21.

134. *Ibid.*, pp. 22-24.

135. *Ibid.*, pp. 24-25.

136. *Ibid.*, p. 25. However, the relevance of the word "dominance" to disaster relief, humanitarian assistance, and other forms of military operations other than war is not clear and is not explained in *Joint Vision 2010*.

137. Bradley Graham, "Pentagon's Plan for Future Draws Heavily from Cold War Past," *Washington Post*, May 11, 1997, p. 19.

138. Thomas E. Ricks, "Armed Forces Prepare to Battle One Another for Funds," *Wall Street Journal*, February 6, 1997, pp. 1,

16.

139. Shalikashvili, *Joint Vision 2010*, p. 4.

140. *Ibid.*, p. 17.

141. For example, former United Nations Ambassador Madeleine Albright's query of then Chairman of the Joint Chiefs of Staff, General Colin Powell is instructive. In debating their respective positions concerning U.S. ground force intervention in Bosnia, Ambassador Albright asked, "What is the point of having this superb military that you're always talking about if we can't use it?" "Talk of the Town," *The New Yorker*, October 2, 1995. p. 35.

142. "Military Relief Missions Will Rise," *North County (CA) Times*, April 8, 1997, p. 5.

143. Owens, pp. 1-2.

144. Referencing the U.S. constitutional provision which calls for providing for the common defense.

145. Shalikashvili, *Joint Vision 2010*, p. 4.

146. *Joint Vision 2010* accords with *Department of Defense Directive 2000.12, Subject: DoD Combatting Terrorism Program*, September 15, 1996, which limits DoD's antiterrorism and counterterrorism responsibilities to protection of DoD personnel (and family members), equipment, and facilities.

147. There is evidence of the formation of a community of view along these lines. For example, see Richard J. Sherlock, "New Realities, Old Pentagon Thinking," *Wall Street Journal*, April 24, 1997, pp. 1, 18.

148. Shalikashvili, *Joint Vision 2010*, p. 14.

149. *Ibid.*, p. 9.

150. This approach to hedging against potential threats differs from Cold War approaches such as "worst case" and "near worst case" planning. During the Cold War, the bipolar international security environment and focus on global war made defense planning based on potential threats, without regard to their probability of occurring, more reasonable.

151. Preliminary thinking along this line is reflected in Greg Caires, "Garner: Army Could Reduce the Size of its Divisions," *Defense Daily*, February 25, 1997, p. 285.

152. For example, over time, the United States should place

most of its heavy bombers, aircraft carriers, and heavy armored and mechanized forces in the Reserve Components, while constituting an Active Component largely of smaller, highly lethal, rapidly employable, asymmetric capabilities.

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