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**THE QUADRIENNIAL DEFENCE  
REVIEW AND FORCE  
TRANSFORMATION:**

**NOTES FOR A CAUTIONARY  
ANALYSIS**

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**It is always easy to talk about force transformations, and we are in the process of making such transformations to respond to new challenges:**

- **Capabilities based-force.**
- **Asymmetric warfare**
- **Homeland defense.**
- **Nuclear posture review, counterproliferation, and missile defense.**
- **All of these transformations will occur, but we also need to understand that strategies and words are not plans budgets, plans and budgets are not forces, and forces are not effective war fighting capabilities.**

**Come to the subject of the Transformation of Forces with considerable caution:**

- 40 years of listening to military rhetoric about the “force around the corner” have inevitably led to the discovery that it is the force of the next decade.
- Work in the field in three different wars have shown me how difficult force transformation really is.
- Worked on some of the original FYDP efforts in OSD/SA under McNamara and Alan Enthoven.
- Five years in the NATO international staff dealing with the NATO Force Planning Exercise, and transition from US MAP supply and one year plans to self-supply and five year plans.
- In DARPA tactical technology in early 1970s.

**Transformations do occur, and they are important, but they take three different forms:**

- **Transformation to Fundamentals** – when a force that is not truly ready for war has to create the readiness and effectiveness needed to fight.
  - World War II saw many transformations: armor and mechanized warfare, strategic bombing and close air support, amphibious warfare, ASW and submarine warfare, and long-range missiles.
  - All of these transformations still continue, however, and the transformations to fundamentals were at least as important.
  - Germany and NCOs after Poland, Russians through attrition. US in Kasserine Pass in World War – training for defeat.
  - Task Force Smith in Korea – arrogance over readiness and capability.
  - Air-to-air missile war in Vietnam versus combat maneuver and aggressor squadron training.
  - Rebuilding readiness and sustainability under Reagan.
  - Fort Irwin, Red Flag, Twenty-Nine Palms.

- . All countries find they must relearn some aspect of military fundamentals in each war. No peacetime transformation has ever been complete in this respect.
- **Evolutionary Transformation** – the steady and systematic creation of new capabilities in the form of deployed, real world war fighting capabilities.
  - Satellites and the slow creation of C4I/SR.
  - Precision weapons and avionics, BM, targeting systems.
  - Air mobility: Korea to Vietnam.
  - The Army transition to the AH-64. M-1, and M-2 in the Gulf War.
  - Stealth
  - Night vision, all weather warfare.
  - Training and simulation.
  - Jointness.
- **Revolutionary Transformation** – the sudden and radical conversion of new concepts into functioning deployed forces.
  - More myth than real, and usually consists of tactical innovation in war that becomes evolutionary in real world. Sometimes just flatly wrong:
    - Counterinsurgency in Vietnam.
    - Refight the Gulf War in Joint Vision 2010; Two MRC strategy in BUR.
  - Radar is possible exception
  - Tank, Snorkel, ATGM, BVR AAM, SAM all example of slow evolution of “force multipliers that became force additives.”
  - Strategic bombing classic case of transformation still in progress. Dates back to 1917 and is still in progress.
  - Small tank in DARPA in 1974 – may show up in 2014.
  - New concepts and strategies are easy to write but rarely endure for a single FDYP.
  - If it isn’t in the plan and the budget it isn’t real and it probably will never be a revolution. If you cannot actually deploy it and train with it, you can’t fight with it.
  - Rarely cost-effective for small forces or forces of developing world to attempt revolutionary force transformations unless face existential pressure to do so.
  - Trying to skip ahead a generation usually fails.
  - Sudden massive savings in the forms of force reorganizations, shifts in command structures, changes in management and procurement, are also almost always a myth, and rarely achieve even evolutionary transformation.
    - Saving \$44 billion twice, and then 25 billion never.
    - Base closings, headquarters cuts. Pentagon parking lot example.

**That said, we are already in the process of major evolutionary transformations, and have been for nearly two decades:**

- **Decoupling of political and military responsibility:** No war is ever free of command controversy or friction between political and military leadership. However, the Coalition forces fought the Gulf War with effective delegation of responsibility for military decisions to military commanders. RMA forces are likely to enjoy the same advantage in mid-to-high-intensity wars where rival military forces will be more politicized, and organized more to suit the regime's internal security needs than to conduct modern joint operations.
- **Unity of command:** The level of unity of command, and "fusion," achieved during the Gulf War was scarcely perfect, but it was far more effective than that possible in most states. Advanced powers have improved its unity of command and ability to conduct joint operations.
- **Jointness, Combined operations, combined arms, and the "AirLand Battle":** Advanced powers can use technology to train and integrate in ways that allow far more effective approaches to jointness, combined arms and combined operations. They have developed tactics that closely integrated air and land operations.
- **Emphasis on maneuver:** The US had firepower and attrition warfare until the end of the Vietnam War. In the years that followed, it converted its force structure to place an equal emphasis on maneuver and deception. This emphasis has been adopted by Britain and France, and other advanced states...
- **Emphasis on deception and strategic/tactical innovation:** No country has a monopoly on the use of deception and strategic/tactical innovation. High technology powers with advanced battle management and information systems will, however, be able to penetrate the enemy's decision-making system and react so quickly that the opponent cannot compete.
- **"24 hour war" - Superior night, all-weather, and beyond-visual-range warfare:** "Visibility" is always relative in combat. There is no such thing as a perfect night vision or all-weather combat system, or way of acquiring perfect information at long-ranges. Advanced technology air and land forces, however, have far better training and technology for such combat than they ever had in the past, and are designed to wage warfare continuously at night and in poor weather. Equally important, they are far more capable of taking advantage of the margin of extra range and tactical information provided by superior technology.
- **Near Real-Time Integration of C<sup>4</sup>I/SR/BM/T/BDA:** New C<sup>4</sup>I/BM/T/BDA organization, technology, and software systems make it possible to integrate various aspects of command, control, communications, computers, and intelligence (C<sup>4</sup>I); battle management (BM); targeting (T); and battle damage assessment (BDA) to achieve a near real time integration and decision making-execution cycle.
- **A new tempo of operations:** Superiority in virtually every aspect of targeting, intelligence gathering and dissemination, integration of combined arms, multi-service forces, and night and all-weather warfare make it possible to achieve both a new tempo of operations and one far superior to that of the enemy.

- **A new tempo of sustainability:** Advanced forces will have maintainability, reliability, reparability, and the speed and overall mobility of logistic, service support, and combat support force activity that broadly match their maneuver and firepower capabilities. The benefits of these new capabilities are already reflected in such critical areas as the extraordinarily high operational availability and sortie rates of Western combat aircraft, and the ability to support the movement of heliborne and armored forces
- **Beyond-visual-range air combat, air defense suppression, air base attacks, and airborne C<sup>4</sup>I/BM:** The Coalition in the Gulf had a decisive advantage in air combat training, beyond-visual-range air combat capability, anti-radiation missiles, electronic warfare, air base and shelter and kill capability, stealth and unmanned long-range strike systems, IFF and air control capability, and airborne C<sup>4</sup>I/BM systems like the E-3 and ABCCC. These advantages allowed the Coalition to win early and decisive air supremacy. Advanced forces will steadily improve the individual capability of these systems and their integration into “netrocentric” warfare.
- **Focused and effective interdiction bombing:** Advanced forces will organize effectively to use its deep strike capabilities to carry out a rapid and effective pattern of focus strategic bombing where planning is sufficiently well coupled to intelligence and meaningful strategic objectives so that such strikes achieve the major military objectives that the planner sets. At the same time, targeting, force allocation, and precision kill capabilities will advance to the point where interdiction bombing and strikes are far more lethal and strategically useful than in previous conflicts.
- **Expansion of the battle field: "Deep Strike":** As part of its effort to offset the Warsaw Pact's numerical superiority, US tactics and technology emphasized using AirLand battle capabilities to extend the battlefield far beyond the immediate forward “edge” of the battle area (FEBA). The Coalition exploited the resulting mix of targeting capability, improved air strike capabilities, and land force capabilities in ways during the Gulf War that played an important role in attriting Iraqi ground forces during the air phase of the war, and which helped the Coalition break through Iraqi defenses and exploit the breakthrough. Even in Kosovo, the US and NATO were only beginning to employ advanced "deep strike" targeting technologies and precision strike systems and far more advanced systems are in development.
- **Technological superiority in many critical areas of weaponry:** The West and GCC scarcely had a monopoly on effective weapons during the Gulf War, but they had a critical “edge” in key weapons like tanks, other armored fighting vehicles, artillery systems, long-range strike systems, attack aircraft, air defense aircraft, surface-to-air missiles, space, attack helicopters, naval systems, sensors, battle management, and a host of other areas. This superiority went far beyond the technical "edge" revealed by "weapon on weapon" comparisons. Coalition forces exploited technology in "systems" that integrated mixes of different weapons into other aspects of force capability and into the overall force structure.
- **Integration of precision-guided weapons into tactics and force structures:** Advanced forces will exploit a technical “edge” in the ability to use precision-guided

weapons with far more realistic training in using such weapons, and the ability to link their employment to far superior reconnaissance and targeting capability.

- **Realistic combat training and use of technology and simulation:** During the Gulf War, the US and Britain used training methods based on realistic combined arms and AirLand training, large-scale training, and adversary training. These efforts proved far superior to previous methods and were coupled to a far more realistic and demanding system for ensuring the readiness of the forces involved. They show the value of kinds of training that allow forces to rapidly adapt to the special and changing conditions of war.
- **Emphasis on forward leadership and delegation:** Technology, tactics, and training all support aggressive and innovative leadership.
- **Professional, well-educated forces and heavy reliance on NCOs and highly skilled enlisted personnel:** Advanced forces will not rely on conscripts or reserves, but will place heavy reliance on the technical skills, leadership quality, and initiative of non-commissioned officers (NCOs) and experienced enlisted personnel.
- **High degree of overall readiness:** Military readiness is a difficult term to define since it involves so many aspects of force capability. RMA forces, however, will have more realistic standards for measuring readiness and ensuring proper reporting, and adequate funding over a sustained period of time.

**The New US QDR Has the Rhetoric of a Semi-Revolutionary Transformation but marks the reality of evolutionary change**

- **Transformation Pillars**

- Transformation is not an end point. DoD's approach to transformation rests on four pillars:
- Strengthening joint operations through standing joint task force headquarters, improved joint command and control, joint training, and an expanded joint forces presence policy;
- Experimenting with new approaches to warfare, operational concepts and capabilities, and organizational constructs such as standing joint forces through war gaming, simulations and field exercises focused on emerging challenges and opportunities;
- Exploiting U.S. intelligence advantages through multiple intelligence collection assets, global surveillance and reconnaissance, and enhanced exploitation and dissemination;
- Developing transformational capabilities through increased and wide-ranging science and technology, selective increases in procurement, and innovations in DoD processes.

- **Six critical operational goals provide the focus for DoD's transformation efforts:**
  - Protecting critical bases of operations (U.S. homeland, forces abroad, allies, and friends) and defeating CBRNE weapons and their means of delivery;
  - Assuring information systems in the face of attack and conducting effective information operations;
  - Projecting and sustaining U.S. forces in distant anti-access or area-denial environments and defeating anti-access and area-denial threats;
  - Denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike, through a combination of complementary air and ground capabilities, against critical mobile and fixed targets at various ranges and in all weather and terrains;
  - Enhancing the capability and survivability of space systems and supporting infrastructure; and
  - Leveraging information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture. Protecting the American homeland from attack is the foremost responsibility of the U.S. Armed Forces and a primary mission for the Reserve Components.
- **Essentially kept old force structure, originally with all of existing funding and modernization problems.**
  - Gave as much priority to readiness and manpower improvements as change.
  - Saw regional shift towards Asia, but not one allowing reallocation of forces and capabilities.
  - Did not explicitly address issue of China.
  - Did talk about a Southern Belt of Instability from Balkans to South Asia, but did not describe any major changes in coalitions, basing, and force posture.
- **Call for the US to "deter forward." No retreat to bastion like fortress America or away from forward presence.**
  - **Talked about modular and scalable forces but never made it clear how these would differ from existing forces.**
- **Saw major technical challenges in transforming US forces but did not define any detail response, only set forth broad principles:**
  - **Rapid advancement of military technologies.** The ongoing revolution in military affairs could change the conduct of military operations. Technologies for sensors, information processing, precision guidance, and many other areas are rapidly advancing. **This poses the danger that states hostile to the United States could significantly enhance their capabilities by integrating widely**

- available off-the-shelf technologies into their weapon systems and armed forces.**
- For the United States, the revolution in military affairs holds the potential to confer enormous advantages and to extend the current period of U.S. military superiority. Exploiting the revolution in military affairs requires not only technological innovation but also development of operational concepts, undertaking organizational adaptations, and training and experimentation to transform a country's military forces.
  - **Increasing proliferation of CBRNE weapons and ballistic missiles.** The pervasiveness of proliferation in an era of globalization has increased the availability of technologies and expertise needed to create the military means to challenge directly the United States and its allies and friends.
  - Likewise, the biotechnology revolution holds the probability of increasing threats of **biological warfare.**
  - **Emergence of new arenas of military competition. Technological advances create the potential that competitions will develop in space and cyber space.**
  - Space and information operations have become the backbone of networked, highly distributed commercial civilian and military capabilities. This opens up the possibility that space control - the exploitation of space and the denial of the use of space to adversaries - will become a key objective in future military competition.
  - Similarly, states will likely develop offensive information operations and be compelled to devote resources to protecting critical information infrastructure from disruption, either physically or through cyber space.
  - **Increasing potential for miscalculation and surprise.** Together, these military-technical trends create an increased potential for miscalculation and surprise. In recent years, the United States has been surprised by the speed with which other states have progressed in developing weapons of mass destruction and ballistic missiles. In the future, it is unlikely that the United States will be able accurately to predict how successfully other states will exploit the revolution in military affairs, how rapidly potential or actual adversaries will acquire CBRNE weapons and ballistic missiles, or how competitions in space and cyber space will develop
  - **No real supporting FDYP, conventional modernization plan, nuclear modernization plan** (Nuclear Posture Review is mandated by the Congress and due in December 2001) and thought was about 80 funding of readiness goals.
    - **Do create a whole new group of bodies in OSD and services to plan and manage force transformation.**
  - **Talks about asymmetric warfare and Homeland defense but does not really defined.**
    - Missile defense still more a façade than a plan, but development moving forward.

- **Shifts from contingency to capabilities-driven force** but originally came close to meaning down-sizing.
  - The United States cannot know with confidence what nation, combination of nations, or non-state actor will pose threats to vital U.S. interests or those of U.S. allies and friends decades from now. It is possible, however, to anticipate the capabilities that an adversary might employ to coerce its neighbors, deter the United States from acting in defense of its allies and friends, or directly attack the United States or its deployed forces. A capabilities-based model - one that focuses more on how an adversary might fight than who the adversary might be and where a war might occur - broadens the strategic perspective. It requires identifying capabilities that U.S. military forces will need to deter and defeat adversaries who will rely on surprise, deception, and asymmetric warfare to achieve their objectives. Moving to a capabilities-based force also requires the United States to focus on emerging opportunities that certain capabilities, including advanced remote sensing, long-range precision strike, transformed maneuver and expeditionary forces and systems, to overcome anti-access and area denial threats, can confer on the U.S. military over time.
- **Seeking lighter force and one easier to project, but again no clear force plan.**
- **Major new emphasis on jointness in a global context.**
- **Emphasize coalition warfare, but not means and shifts in technology, training, organization, and joint planning. Missing element of “jointness.”**
  - The need to strengthen alliances and partnerships has specific military implications. It requires that U.S. forces train and operate with allies and friends in peacetime as they would operate in war. This includes enhancing interoperability and peacetime preparations for coalition operations, as well as increasing allied participation in activities such as joint and combined training and experimentation.
- Did not really address threat of proliferation and higher levels of asymmetric warfare in detail.
- September 11<sup>th</sup> has thrust us into a real-world force planning exercise with little real constraints, but unlikely can really get into next year’s POM, particularly with attack on Pentagon.
- Reality-driven programming and budgeting exercise over next five years.
- **The New QDR essentially left 90% of the US force posture alone as “legacy forces” versus about 10% for a high technology spearhead force.**
  - **This actually marked almost no major procurement changes relative to the modernization plan inherited from the Clinton Administration**

## **What the QDR Says About “Transformation”**

“Achieving the objectives of the defense strategy requires the transformation of the U.S. Armed Forces. Transformation results from the exploitation of new approaches to operational concepts and capabilities, the use of old and new technologies, and new forms of organization that more effectively anticipate new or still emerging strategic and operational challenges and opportunities and that render previous methods of conducting war obsolete or subordinate.

“Transformation can involve fundamental change in the form of military operations, as well as a potential change in their scale. It can encompass the displacement of one form of war with another; such as fundamental change in the ways war is waged in the air, on land and at sea. It can also involve the emergence of new kinds of war, such as armed conflict in new dimensions of the battlespace.

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

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

“To further facilitate transformation, the Military Departments and Defense Agencies will develop transformation roadmaps that specify timelines to develop Service-unique capabilities necessary to meet the six critical operational goals described below

### **Operational Goals**

“Not all change in military capabilities, however desirable for other reasons, is transformational. The purpose of transformation is to maintain or improve U.S. military preeminence in the face of potential disproportionate discontinuous changes in the strategic environment. Transformation must therefore be focused on emerging strategic and operational challenges and the opportunities created by these challenges.

- **Six critical operational goals provide the focus for DoD’s transformation efforts:**
  - Protecting critical bases of operations (U.S. homeland, forces abroad, allies, and friends) and defeating CBRNE weapons and their means of delivery;

- Assuring information systems in the face of attack and conducting effective information operations;
- Projecting and sustaining U.S. forces in distant anti-access or area-denial environments and defeating anti-access and area-denial threats;
- Denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike, through a combination of complementary air and ground capabilities, against critical mobile and fixed targets at various ranges and in all weather and terrains;
- Enhancing the capability and survivability of space systems and supporting infrastructure; and
- Leveraging information technology and innovative concepts to develop an interoperable, joint C4ISR architecture and capability that includes a tailorable joint operational picture. Protecting the American homeland from attack is the foremost responsibility of the U.S. Armed Forces and a primary mission for the Reserve Components.

“Future adversaries will most certainly have a range of new means with which to threaten the United States. It is possible to identify confidently some of these means, including new techniques of terror; ballistic and cruise missiles; weapons of mass destruction, including advanced biological weapons; and weapons of mass disruption, such as information warfare attacks on critical information infrastructure. Others, like those used to attack the United States on September 11, 2001, may be a surprise. Defenses against known and emerging threats must be developed. New approaches to achieving early warning of new threats are a high priority

“The increasing dependence of societies and military forces on advanced information networks creates new vulnerabilities and opportunities. Potential adversaries could exploit these vulnerabilities through means such as computer network attack and directed energy weapons. The emergence of these new tools of warfare also provides opportunities for non-kinetic attack by U.S. forces.

“Future adversaries could have the means to render ineffective much of our current ability to project military power overseas. Saturation attacks with ballistic and cruise missiles could deny or delay U.S. military access to overseas bases, airfields, and ports. Advanced air defense systems could deny access to hostile airspace to all but low-observable aircraft. Military and commercial space capabilities, over-the-horizon radars, and low-observable unmanned aerial vehicles could give potential adversaries the means to conduct wide-area surveillance and track and target American forces and assets. Anti-ship cruise missiles, advanced diesel submarines, and advanced mines could threaten the ability of U.S. naval and amphibious forces to operate in littoral waters. New approaches for projecting power must be developed to meet these threats.

“Adversaries will also likely seek to exploit strategic depth to their advantage. Mobile ballistic missile systems can be launched from extended range, exacerbating the anti-

access and area-denial challenges. Space denial capabilities, such as ground-based lasers, can be located deep within an adversary's territory. Accordingly, a key objective of transformation is to develop the means to deny sanctuary to potential adversaries. This will likely require the development and acquisition of robust capabilities to conduct persistent surveillance, precision strike, and maneuver at varying depths within denied areas.

“In addition to exploiting space for their own purposes, future adversaries will also likely seek to deny U.S. forces unimpeded access to space. Space surveillance, ground-based lasers and space jamming capabilities, and proximity micro satellites are becoming increasingly available. A key objective for transformation, therefore, is not only to ensure the U.S. ability to exploit space for military purposes, but also as required to deny an adversary's ability to do so.

“Finally, new information and communications technologies hold promise for networking highly distributed joint and combined forces and for ensuring that such forces have better situational awareness - both about friendly forces as well as those of adversaries - than in the past.

Information technology holds vast potential for maximizing the effectiveness of American men and women in uniform.

### **Transformation Pillars**

“Transformation is not an end point. DoD's approach to transformation rests on four pillars:

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

### **Strengthening Joint Operations**

“To better meet future warfare challenges, DoD must develop the ability to integrate combat organizations with forces capable of responding rapidly to events that occur with little or no warning. These joint forces must be scalable and task-organized into modular units to allow the combatant commanders to draw on the appropriate forces to deter or defeat an adversary. The forces must be highly networked with joint command and control, and they must be better able to integrate into combined operations than the forces of today.

“These joint forces will be used to manage crises, forestall conflict, and conduct combat operations. They must be lighter, more lethal and maneuverable, survivable, and more readily deployed and employed in an integrated fashion. They must be not only capable of conducting distributed and dispersed operations, but also able to force entry in anti-access or area-denial environments.

### **Joint and Combined Command and Control**

“Future military responses will require the rapid movement and integration of joint and combined forces. To be successful, operations will demand a flexible, reliable, and effective joint command and control architecture that provides the flexibility to maneuver, sustain, and protect U.S. forces across the battlefield in a timely manner.

“Such a joint command and control structure must reside not only at the joint command, but also extend down to the operational service components. The structure must be networked to ensure shared battlespace awareness. It must be supported by the appropriate doctrine, tactics, techniques, and procedures, as well as a highly trained operational force. Most important, it must develop and foster a joint professional culture, a requirement that presents a significant challenge to service and joint training and professional education programs. The joint command and control system - both the information that flows through the network and the equipment upon which it resides - must be secure and protected from an adversary’s information operations or other attacks. U.S. forces require the ability to communicate not only with one another, but also with other government agencies and allies and friends. Such joint and combined interoperability requires forces that can immediately “plug” into the joint battlefield operating systems (command and control, intelligence, fire support, logistics, etc.) and perform effectively. These forces need compatible systems with interoperable standards, doctrine, tactics, techniques, and procedures.

“To support joint and combined command and control and to enable a common relevant operational picture of the battlespace, the Department will enhance end-to-end interoperable communications for secure planning and operations. These communications will provide shared situational awareness and integration of joint fires, maneuver, and intelligence. They must be interoperable across all components and tailorable for coalition operations with other countries. The capability provided by this network and its applications will enable rapid response forces to plan and execute faster than the enemy and to seize tactical opportunities.

### **Standing Joint Task Force Headquarters**

“To strengthen joint operations, the Department will develop over the next several months’ proposals to establish a prototype for Standing Joint Task Force (SJTF) Headquarters. The goal is to establish a SJTF headquarters in each of the regional combatant commands. The headquarters will provide uniform, standard operating procedures, tactics, techniques, and technical system requirements, with the ability to move expertise among commands.

“SJTF headquarters will have a standardized joint C4ISR architecture that provides a common relevant operational picture of the battlespace for joint and combined forces. And it will have mechanisms for a responsive integrated logistics system that provide warfighters easy access to necessary support without burdensome lift and infrastructure requirements. SJTF headquarters will also utilize adaptive mission planning tools that allow U.S. forces to operate within the adversary’s decision cycle and respond to changing battlespace conditions.

### **Standing Joint Task Forces**

“In addition, the Department will examine options for establishing Standing Joint Task Forces (SJTFs). SJTF organizations will focus in particular on the critical operational goals described previously. They will seek to develop new concepts to exploit U.S. asymmetric military advantages and joint force synergies. These concepts will be designed to take into account the potential to achieve significantly greater military capability at lower total personnel levels.

“One option will include a plan for a SJTF for unwarned, extended-range conventional attack against fixed and mobile targets at varying depths. Such an SJTF would address one of the critical operational challenges of the future - developing the capability to continuously locate and track mobile targets at any range and rapidly attack them with precision. Overcoming this challenge will require enhanced intelligence capabilities, including space-based systems, additional human intelligence, and airborne systems that can locate and track moving targets and transmit that information to strike assets. It will require the ability to strike without warning from the air, from the sea, on the ground, and through space and cyber space. It will also require that these forces be networked to maximize their combined effects.

“Establishing a Standing Joint Task Force for extended-range, unwarned conventional strike would provide the organizational means to achieve a networked capability. This Standing Joint Task Force could serve as the vanguard for the transformed military of the future. It could undertake experimental exercises as new technologies become available. It would also offer immediate operational benefits

### **Joint Presence Policy**

“To strengthen the Secretary of Defense’s management of the allocation of joint deterrent and warfighting assets from all Military Departments, the QDR calls for the establishment of a joint presence policy. This new policy would build on the existing Global Naval Forces Presence Policy, but it would also subsume the rotational overseas presence force of all military Services.

“Establishing a joint presence policy will increase the capability and flexibility of U.S. forward-stationed forces and aid in managing force management risks. This policy will establish steady-state levels of air, land, and naval presence in critical regions around the world. It will synchronize deployments of U.S. forces and facilitate cross-Service trades for presence and deterrence. It will also allow for better coordination in the readiness and tempo of operations of all U.S. forces.

#### **Sustaining the Force**

“To ensure the Department transforms its logistics capabilities, DoD will pursue actions to sustain the force more effectively and efficiently. Specific areas will include a dramatically improved deployment process and accelerated implementation of logistics decision support tools. DoD must also accelerate logistics enterprise integration, reduce logistics demand, and reduce the cost of logistics. In addition, conducting industrial vulnerability assessments and developing sustainment plans for the most critical weapons systems and preferred munitions will help ensure effective sustainment.

### **Experimenting in Support of Transformational Change**

“To identify the best available solutions to emerging operational challenges, the defense strategy will employ military field exercises and experiments. Over the last century, military field exercises and experiments oriented toward addressing emerging challenges and opportunities at the operational level of war have been important enablers of military innovation and transformation.

These operations reduce uncertainty about the future conflict environment and future capabilities. Exercises and experiments are a critical phase in developing new types of forces and operational concepts that can respond to emerging operational challenges and dominate opponents who effectively exploit aspects of the changing security environment.

“Field exercises that incorporate experimentation - at both the joint and the service levels - provide an indispensable means for solving emerging challenges. For instance, with respect to the challenge of projecting power in an anti-access environment, field exercises and experiments will enable the military to identify promising operational concepts for deploying forces into theater and conducting extended-range precision strikes against mobile targets. Further, these exercises and experiments will help to determine if secure access to forward bases is possible and to identify ways to sustain operations for a period sufficient to achieve U.S. objectives. They will also assist the United States in determining which new systems and capabilities will be required, which existing systems

and capabilities should be sustained, and what combination of transformational and legacy

“Moreover, field exercises and experiments that enable the U.S. military to create and maintain options for a variety of emerging capabilities greatly complicate the planning of would-be adversaries. By enabling the creation of a range of capabilities and warfighting options, field exercises and experimentation can compel future competitors into an unenviable choice. They can seek to develop responses to most or all of the U.S. capabilities and options and consequently stretch their limited resources thin, or they can choose the high-risk option of focusing their efforts on offsetting only one or a few of the new warfighting options, leaving themselves vulnerable to the others. When confronted with this dilemma, potential adversaries may find themselves dissuaded from entering into a military competition in the first place.

“U.S. forces will rely heavily on wargames and simulations to support this program of field exercises and experiments. These important analytic tools can greatly enhance the effectiveness of field exercises by identifying promising capabilities that merit prototyping, new force elements that should be established, and operational concepts that merit the detailed evaluation that only field exercises can provide. Thus wargames and simulations serve as a filter to enhance the focus and value of field exercises. However, simulations and war games have inherent limits in terms of how far they can go in identifying new forms of operation and new military system requirements.

“During the latter stages of the Cold War, the Services invested in a number of high-fidelity training facilities that greatly enhanced the value of their field training. Yet comparable facilities do not exist to support joint high-fidelity field exercises and experiments. DoD will explore the need to establish a joint and interoperability training capability, including a Joint National Training Center as well as opportunities to build on existing

### **Transformation Initiatives**

“In order to advance U.S. transformation efforts, the new defense strategy identifies key operational goals for deterring conflict and conducting military operations. To improve the linkage between strategy and investments, DoD’s investment resources will be focused on achieving six operational goals in the following ways:

#### **1. Protect bases of operation at home and abroad and defeat the threat of CBRNE weapons.**

“DoD maintains many unique capabilities for mitigating and managing the consequences of terrorist attacks on American soil. The Department must be prepared to provide support to state and local authorities, if requested by the lead federal agency. DoD is enhancing its anti-terrorism and force protection programs. It is also increasing investment in chemical and biological countermeasures, including personal protection for DoD personnel. Moreover, DoD has established Weapons of Mass Destruction Civil Support Teams, composed of National Guard personnel and the Marine Corps’

Chemical- Biological Incident Response Force. These teams stand ready to provide support, if directed. To improve DoD's ability to provide such support, the QDR calls for selected readiness enhancements to the Army's Reserve Component.

"The continued proliferation of ballistic and cruise missiles poses a threat to U.S. territory, to U.S. forces abroad, at sea, and in space, and to U.S. allies and friends. To counter this threat, the United States is developing missile defenses as a matter of priority. Integrating missile defenses with other defensive as well as offensive means will safeguard the Nation's freedom of action, enhance deterrence by denial, and mitigate the effects of attack if deterrence fails. The ability to provide missile defenses in anti-access and area-denial environments will be essential to assure friends and allies, protect critical areas of access, and defeat adversaries. DoD must be prepared to provide near-term capabilities to defend against rapidly emerging threats and more robust capabilities that evolve over time.

"DoD has refocused and revitalized the missile defense program shifting from a single-site "national" missile defense approach to a broad-based research, development, and testing effort aimed at deployment of layered missile defenses. These changes in the missile defense program will permit the exploration of many previously untested technologies and approaches that will produce defenses able to intercept missiles of various range and in various phases of flight. These defenses will help protect U.S. forward-deployed forces. Moreover, they will provide limited defense against missile threats not only for the American people, but also for U.S. friends and allies.

## **2. Assure information systems in the face of attack and conduct effective information operations.**

"Information operations provide the means to rapidly collect, process, disseminate, and protect information while denying these capabilities to adversaries. Such operations provide the capability to influence perceptions, perform computer network defense and attack missions, conduct electronic warfare, and carry out other protective actions. Information operations represent a critical capability enhancement for transformed U.S. forces.

"The QDR highlights both the imperative for the United States to maintain an unsurpassed capability to conduct information operations, as well as the need to strengthen U.S. capabilities in these areas. DoD must also develop an integrated approach to developing information system requirements, acquiring systems, and programming for the force of tomorrow. The ability to conduct information operations has become a core competency for the Department.

## **3. Project and sustain U.S. forces in distant anti-access and area-denial environments.**

"The defense strategy rests on the assumption that U.S. forces have the ability to project power worldwide. The United States must retain the capability to send well-armed and

logistically supported forces to critical points around the globe, even in the face of enemy opposition, or to locations where the support infrastructure is lacking or has collapsed. For U.S. forces to gain the advantage in such situations, they must have the ability to arrive quickly at non-traditional points of debarkation to mass fire against an alerted enemy and to mask their own movements to deceive the enemy and bypass its defenses. Consequently, DoD must carefully monitor attempts by adversaries to develop capabilities that could detect and attack U.S. forces as they approach conflict areas or hold at risk critical ports and airbases with missiles and CBRNE attacks.

“The QDR emphasizes the need for new investments that would enable U.S. forces to defeat anti-access and area-denial threats and to operate effectively in critical areas. Such investments will include: addressing the growing threat posed by submarines, air defense systems, cruise missiles, and mines; enhancing power projection and forcible entry capabilities; defeating long-range means of detection; enabling long-range attack capabilities; enhancing protection measures for strategic transport aircraft; and ensuring U.S. forces can sustain operations under chemical or biological attack.

#### **4. Deny enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement.**

“Likely enemies of the United States and its allies will rely on sanctuaries—such as remote terrain, hidden bunkers, or civilian “shields” - for protection. The capability to find and strike protected enemy forces while limiting collateral damage will improve the deterrent power of the United States and give the President increased options for response if deterrence fails. Such a capability would not only reduce the likelihood of aggression, but would offer the National Command Authorities the ability to respond immediately in the event of hostilities.

“Achieving this objective will require investments in a wide range of cross-Service programs. Investments in intelligence, surveillance, and reconnaissance (ISR) initiatives must be bolstered. Also emphasis must be placed on manned and unmanned long-range precision strike assets, related initiatives for new small munitions, and the ability to defeat hard and deeply buried targets.

DoD will accelerate the conversion of Trident submarines to guided missile submarines. DoD will procure unmanned combat aerial vehicles and intelligence, surveillance, and reconnaissance unmanned aerial vehicles such as Global Hawk. The Department will also increase procurement of precision weapons.

“Special Operations Forces will need the ability to conduct covert deep insertions over great distances and will need enhanced C4ISR capabilities to remain in contact with their commanders and to ensure access to real-time intelligence in a number of forms. These capabilities will enable Special Operations Forces to access additional communication, intelligence, and firepower assets in support of their missions deep in hostile environments and to aid in the reduction of friendly losses and casualties. These capabilities will also enhance the strategic and operational agility of Special Operations Forces.

**5. Enhance the capability and survivability of space systems.**

“Because many activities conducted in space are critical to America’s national security and economic well being, the ability of the United States to access and utilize space is a vital national security interest. During crisis or conflict, potential adversaries may target U.S., allied, and commercial space assets as an asymmetric means of countering or reducing U.S. military operational effectiveness, intelligence capabilities, economic and societal stability, and national will. Ensuring the freedom of access to space and protecting U.S. national security interests in space are priorities for the Department.

“The mission of space control is to ensure the freedom of action in space for the United States and its allies and, when directed, to deny such freedom of action to adversaries. As the foundation for space control, space surveillance will receive increased emphasis. DoD will pursue modernization of the aging space surveillance infrastructure, enhance the command and control structure, and evolve the system from a cataloging and tracking capability to a system providing space situational awareness.

In recognition of the high-technology force multipliers provided by space systems, the QDR places increased emphasis on developing the capabilities to conduct space operations.

“Ensuring freedom of access to space and protecting U.S. national security interests are key priorities that must be reflected in future investment decisions.

**6. Leverage information technology and innovative concepts to develop interoperable Joint C4ISR.**

“Information technology will provide a key foundation for the effort to transform U.S. armed forces for the 21<sup>st</sup> century. The recent U.S. experience in Kosovo underscored the need for high-capacity, interoperable communications systems that can rapidly transmit information over secure, jam-resistant datalinks to support joint forces. In the near future, the United States must also develop alternatives capable of overcoming current and projected bandwidth constraints. The Department must stay abreast of the new communications landscape and leverage it to maximize U.S. advantages in this area.

Future operations will not only be joint, but also include Reserve Components, civilian specialists, and other federal agencies and state organizations. Most likely they will involve a coalition effort with other countries. The effectiveness of these operations will depend upon the ability of DoD to share information and collaborate externally as well as internally. Interoperability, which enables joint and combined operations, is a key element in all DoD operational and systems architectures. It must include the ability to overcome language and cultural barriers.

“Experience shows that fixing systems after the fact to achieve interoperability is typically costly and often fails to satisfy mission requirements and creates security problems. The better approach is to incorporate interoperability at the outset in designing new systems.

“However, the Department will continue its efforts, where cost effective, to bring its legacy systems up to interoperability standards. Based on QDR deliberations, funding

will be focused on achieving end-to-end Command, Control, Communication, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities. An integrated joint and combined C4ISR capability is necessary to ensure that accurate and relevant information can be gathered swiftly from various sources and then securely transmitted to forces and their commanders. Improving communications must be a priority for U.S. conventional, special operations, and strategic forces.

Information technology offers U.S. forces the potential of conducting joint operations more effectively, with smaller forces and fewer weapon systems.

“To achieve these operational goals, the Defense Department must transform military training. Three basic tenets describe the changes the Department will implement to transform training in parallel with the transformation of its missions and forces: Reverse the erosion of DoD’s training range infrastructure and ensure that ranges are sustainable, capable, and available. Revise acquisition and logistics policies and procedures to emphasize training and the timeliness of fielding modern, fully capable training systems; and use distributed learning technologies to reengineer individual training and job performance.

## **Asymmetric Warfare**

- **Ranges from proliferation to use of media.**
- **Globalization is occurring:**
- **Iraq helps Serbia.**
- **Iran's focused use of Guards and naval power near Strait of Hormuz.**
- **New Chinese book on modern methods to defeat Western conventional advantage.**
- **Proliferation most threatening, but includes information warfare, terrorism, human shields, guerrilla warfare, use of media.**
- **Few rules and little practical experience.**
- **Can use many types of asymmetric warfare simultaneously.**
- **Iraq and now Serbia show that can continue to fight asymmetric warfare even if formally accept defeat**

## **Asymmetric Warfare and the Vulnerabilities of Advanced Technology Powers**

- *Sudden or surprise attack:* Power projection is dependent on strategic warning, timely decision making, and effective mobilization and redeployment for much of its military effectiveness..
- *Saturation:* There is no precise way to determine the point at which mass, or force quantity, overcomes superior effectiveness, or force quality -- historically, efforts to emphasize mass have been far less successful than military experts predicted at the time. Even the best force, however, reaches the point where it cannot maintain its “edge” in C<sup>4</sup>I/battle management, air combat, or maneuver warfare in the face of superior numbers or multiple threats. Further, saturation may produce a sudden catalytic collapse of effectiveness, rather than a gradual degeneration from which the Israeli Defense Force could recover. This affects forward deployment, reliance on mobilization and reliance on defensive land tactics versus preemption and “offensive defense.”
- *Taking casualties:* War fighting is not measured simply in terms of whether a given side can win a battle or conflict, but how well it can absorb the damage inflicted upon it. Many powers are highly sensitive to casualties and losses. This sensitivity may limit its operational flexibility in taking risks, and in sustaining some kinds of combat if casualties become serious relative to the apparent value of the immediate objective.
- *Inflicting casualties:* Dependence on world opinion and outside support means some nations increasingly must plan to fight at least low and mid-intensity conflicts in ways that limit enemy casualties and collateral damage to its opponents, and show that Israel is actively attempting to fight a “humanitarian” style of combat.
- *Low-intensity combat:* Low-intensity conflict makes it much harder to cannot most technical advantages in combat -- because low-intensity wars are largely fought against people, not things. Low-intensity wars are also highly political. The battle for public opinion is as much a condition of victory as killing the enemy. The outcome of such a battle will be highly dependent on the specific political conditions under which it is fought, rather than RMA-like capabilities.
- *Hostage taking and terrorism:* Like low-intensity warfare, hostage-taking and terrorism present the problem that advanced technology powers cannot exploit their conventional strengths, and must fight a low-level battle primarily on the basis of infantry combat. HUMINT is more important than conventional military intelligence, and much of the fight against terrorism may take place in urban or heavily populated areas.
- *Urban and Built-Up Area Warfare:* Advanced military powers are still challenged the problem of urban warfare. They did not perform particularly well in urban warfare. Most western forces are not trained or equipped to deal with sustained urban warfare in populated areas during regional combat -- particularly when the fighting may affect large civilian populations on friendly soil.

- *Extended conflict and occupation warfare:* Not all wars can be quickly terminated, and many forms of warfare -- particularly those involving peace-keeping and peace-enforcement -- require prolonged military occupations.
- *Weapons of mass destruction:* The threat or actual use of such weapons can compensate for conventional weakness in some cases and deter military action in others.

## **Proliferation**

- **A wide range of options:**
- **Chemical weapons**
- **Biological weapons**
- **Nuclear weapons**
- **Ballistic and cruise missiles**
- **Superterrorism and covert warfare.**
- **Missile defense: A useful option, but**
- **Selling what we don't have at a price we do not know with unestablished effectiveness and no clear timelines to resolve uncertainties.**
- **Many alternative delivery methods.**
- **The race in biotechnology is globalizing capability and presents key uncertainties:**
- **Advanced research and genetic engineering to microbreweries and dry storable food powders.**
- **Offense now leading defense, but outcome hard to determine.**
- **Full spectrum of warfighting capabilities from local incidents to city-busting.**

## Who Has Weapons of Mass Destruction?

<u>Country</u>	<u>Type of Weapon of Mass Destruction</u>		
	<u>Chemical</u>	<u>Biological</u>	<u>Nuclear</u>
	<b>East-West</b>		
Britain	Breakout	Breakout	Deployed
France	Breakout	Breakout	Deployed
Germany	Breakout	Breakout	Technology
Sweden	-	-	Technology
Russia	Residual	Residual	Deployed
US	Residual	Breakout	Deployed
	<b>Middle East</b>		
Egypt	Residual	Breakout	-
Israel	Breakout	Breakout	Deployed
Iran	Deployed?	Breakout	Technology
Iraq	Deployed	Deployed	Technology
Libya	Deployed	Research	-
Syria	Deployed	Technology?	-
Yemen	Residual	-	-
	<b>Asia and South Asia</b>		
China	Deployed?	Breakout?	Deployed
India	Breakout?	Breakout?	Deployed
Japan	Breakout	Breakout	Technology
Pakistan	Breakout?	Breakout?	Deployed
North Korea	Deployed	Deployed	Technology
South Korea	Breakout?	Breakout	Technology
Taiwan	Breakout?	Breakout	Technology
Thailand	Residual	-	-
Vietnam	Residual	-	-
	<b>Other</b>		
Argentina	-	-	Technology
Brazil	-	-	Technology
South Africa	-	-	Technology

## **Weapons of Mass Destruction: What Are We Really Talking About?**

- Differ radically in inherent lethality.
- Chemical weapons have marginal real-world status as weapon of mass destruction.
- Lethality models are terrible, both in terms of prompt and long-term effects.
- The actual process of weaponization is critical in determining effectiveness.
- Missiles are only one of many delivery systems and often not the best one.

## The Comparative Effects of Biological, Chemical, and Nuclear Weapons Delivered Against a Typical Urban Target in the Middle East

Using missile warheads: Assumes one Scud sized warhead with a maximum payload of 1,000 kilograms. The study assumes that the biological agent would not make maximum use of this payload capability because this is inefficient. It is unclear this is realistic.

	<u>Area Covered in Square Kilometers</u>	<u>Deaths Assuming 3,000-10,000 people Per Square Kilometer</u>
<u>Chemical:</u> 300 kilograms of Sarin nerve gas with a density of 70 milligrams per cubic meter	0.22	60-200
<u>Biological:</u> 30 kilograms of Anthrax spores with a density of 0.1 milligram per cubic meter	10	30,000-100,000
<u>Nuclear:</u>		
One 12.5 kiloton nuclear device achieving 5 pounds per cubic inch of over-pressure	7.8	23,000-80,000
One 1 megaton hydrogen bomb	190	570,000-1,900,000

Using one aircraft delivering 1,000 kilograms of Sarin nerve gas or 100 kilograms of anthrax spores: Assumes the aircraft flies in a straight line over the target at optimal altitude and dispensing the agent as an aerosol. The study assumes that the biological agent would not make maximum use of this payload capability because this is inefficient. It is unclear this is realistic.

	<u>Area Covered in Square Kilometers</u>	<u>Deaths Assuming 3,000-10,000 people Per Square Kilometer</u>
<u>Clear sunny day, light breeze</u>		
Sarin Nerve Gas	0.74	300-700
Anthrax Spores	46	130,000-460,000
<u>Overcast day or night, moderate wind</u>		
Sarin Nerve Gas	0.8	400-800
Anthrax Spores	140	420,000-1,400,000
<u>Clear calm night</u>		
Sarin Nerve Gas	7.8	3,000-8,000
Anthrax Spores	300	1,000,000-3,000,000

Source: Adapted by the Anthony H. Cordesman from Office of Technology Assessment, Proliferation of Weapons of Mass Destruction: Assessing the Risks, US Congress OTA-ISC-559, Washington, August, 1993, pp. 53-54.

## **Super-Terrorism**

- **Covert warfare, proxy warfare, independent non-state actors.**
- **Strength of West/US creates a growing incentive for covert/indirect attack.**
- **Can use a variety of new methods of attack:**
- **Access to weapons of mass destruction:**
- **Chemical and biological weapons major issue.**
- **Cell phones, GPS, weather models.**
- **Information warfare attacks on critical systems.**
- **Manportable and light precision weapons attacks on critical facilities like power plants, water/desalination plants/grids., high rise closed buildings and mall complexes.**
- **New issues for technology transfer.**
- **Body count may be secondary issue: Terror, intimidation, paralysis of state, limits to alliances.**
- **What form of arms control is relevant?**
- **How can a regime be established to monitor covert/proxy/independent terrorist act?**
- **What level of control on technology transfer is possible and relevant?**

