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Key Points

Security challenges and budget pressures are stretching US forces' capability and capacity. Reform is needed to respond to the demands of the 21st century, and should focus on optimizing service roles and missions to build interdependency, not just interoperability.

The US must balance military readiness with long term capability, and demand more clarity on the goals and desired outcomes on the prudent use of military power. Well into the information age, concepts of operation and bureaucracies have yet to be updated significantly to support this goal.

Congress has an opportunity to direct legislation requiring re examination of roles, missions, and functions across the military services. The creation of a "Commission on Roles and Missions of the Armed Forces in the 21st Century" should be considered to inform revisions to the National Security Act.

Beyond Goldwater-Nichols: Roles And Missions Of The Armed Services In The 21st Century

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Abstract

The Second World War and the Cold War were immense and existential security challenges posed to Americans and our allies in the middle of the 20th century. Members of the so-called "Greatest Generation" prevailed against incredibly daunting odds, successfully building and adapting our military forces to the task of global industrial age conflict.

Today, the grandchildren of that generation are carrying on the tradition of service, facing a far more diverse set of security concerns. At the same time, the progress of the Information Age has sped up the conduct of warfare. These trends have yielded an exceedingly challenging set of circumstances as the US seeks to defend its interests and security around the globe.

Yet our processes, organizations, tasks, and doctrine governing the US armed forces have largely not evolved sufficiently to meet these challenges. Our military services must learn how to rapidly adapt themselves to leverage new technology, foster innovative concepts of operations, and shape their structural and cultural barriers in order to enable the diffusion of new ideas. Congress can play a vital role in accomplishing this task by embracing the opportunity to carry out significant military reforms and re-look the roles and missions of the US armed services in depth for the first time since the 1986 Goldwater-Nichols Act. Our national security enterprise will suffer if we do not embrace this opportunity, and continue down the path of an industrial age status quo.

Introduction

The armed forces of the United States of America are facing a stark contemporary sight picture. The US faces a burgeoning set of threats around the globe, but has fewer resources to meet these challenges. The only way to prevail in these straits is to move to optimize our service roles and missions to evolve from a relationships based on interoperability—a goal of the 1986 Goldwater-Nichols Act—to one of interdependency, the next step in the evolution of our military power.

Reform is urgently needed. A dollar spent on duplicative capability comes at the expense of vital capacity or capability elsewhere. Confused organizational structures lead to sub-optimal employment of stretched forces. Outdated service roles and missions yield costly, inefficient acquisition programs. Today's security environment and fiscal pressures demand change.

If the United States is to succeed in protecting its core interests around the globe, we need to have the strongest Army, Navy, Marine Corps, and Air Force in the world. Fiscal reality dictates that the military will have to make difficult choices to balance near term readiness with long-term needs. This demands much more clarity regarding goals and desired outcomes, with emphasis on what defines effective, prudent power projection in the 21st century. While these dynamics are yielding a budget-driven roles and missions competition, a thoughtful conversation regarding national interests and strategy has yet to occur.

We are well into the information age, yet our systems, organizations, and concepts of operation are rooted in the industrial age of warfare.

The biggest challenge our defense establishment faces is one of institutional inertia. We are well into the information age, yet our systems, organizations, and concepts of operation are rooted in the industrial age of warfare. Our diplomatic, economic, and informational elements of our national security enterprise are also largely unchanged since the mid 20th century. We can no longer afford this misalignment—it is costly, and projects undue risk.

Reforming the US military involves four principal factors: first; advanced technologies that employ new capabilities are changing warfare, and are enabling the second element—new concepts of operation. These new concepts are enhancing in our ability to achieve desired military effects. The third element is organizational evolution that codifies changes in the previous elements, or enhances our ability to execute our National Security Strategy. It is through these lenses that we need to measure our progress. Finally, the essential element to progress is the human dimension. People are fundamental to every task the US military performs, especially leadership in a time of change and transition.

The 21st Century Security Environment

A defense strategy for the 21st century must contend with a range of modern threats and challenges. These include non-state and transnational actors, a rising economic and military powerhouse in China, a resurgent Russia, states that wield nuclear weapons, and a dynamic web of terrorism and illicit networks.

The pace and tenor of our lives has been altered by the speed of rapid change in recent years. Global trade, travel, and telecommunications have produced major shifts in the way we live. This evolution has not occurred in isolation. Speed and compatability have merged, and have permeated the conduct of warfare. Our future military forces must be able to respond rapidly and decisively anywhere on the globe at any time. Recent events have demonstrated key security events now unfold in a matter of hours and days, not months or years. The window to influence key circumstances is increasingly fleeting.

We must now also contend with increasing personnel and procurement costs at a time when defense budgets are decreasing. Therefore, the provision for flexible response across a wide spectrum of circumstances should be foremost among the decision criteria we apply to our future military planning.

In today's information age, we have to acknowledge that deploying large numbers of American military forces onto foreign soil to nation build, vice accomplish a defined mission and leave, is simply counter-productive to securing our goals and objectives. Strategies centered on occupation and attrition warfare expose vulnerabilities, result in anti-American backlash and domestic disap-

proval, and often create destabilizing effects within the very region they are intended to secure.

We must also pursue and invest in options to counter increasingly advanced anti-access strategies and technologies our adversaries will likely employ. Systems like precision weapons and stealth aircraft projected incredible lethality at the end of the Cold War, but these capabilities did not disappear. They continued to advance and proliferate. A quarter century later, it is foolhardy to assume US forces will be afforded freedom of action in future engagements facing such capabilities. Our strategies, planning assumptions, acquisition programs, and training need to adjust as a result.

At the same time, we need to challenge our adversaries' domination of public perception in the information age. We have to learn how to use the application of accurate, compelling information as a core element of our security apparatus. We are woefully inept at strategic communications and too often are put in a reactionary position when it comes to this core tenet of the information age.

Information's value extends past the news cycle. Just as wireless connectivity, personal computing devices, and cloud-based applications are revolutionizing life in the civilian sector, these trends are also radically altering the way in which our military forces project power. Faster and more capable networks and computing capabilities are turning information into the dominant factor in modern warfare. Operations over Syria since 2014 validate the assertion that platforms like the F-22 are information machines, far above and beyond merely being combat assets, as one Air Force commander has noted. Given this reality, it is time we acknowledge that information and its management is just as important today as the traditional tools of hard military power— airplanes, satellites on orbit, infantry, amphibious elements, and warships at sea. Information and data are the forces evolving these tools from isolated instruments of power into a highly integrated enterprise where their movement and manipulation will determine success or failure.

It is time we acknowledge that information and its management is just as important today as the traditional tools of hard military power …

These factors pose major implications throughout the military enterprise—shaping key areas like doctrine, organization, training, materiel acquisition, and sustainment, along with command and control. Leaders in the policy community also need to adjust to the new realities of information age combat operations. Paradigms dating back to World War II are falling short when used to guide employment and sustainment of modern military power.

In sum, the proliferation of technology, speed of information flow, and the associated empowerment of nations states, organizations, and individuals presents one of the most daunting challenges faced by our military forces.

These trends provide a starting point for considering the future. All military services, Department of Defense (DOD) agencies, and other elements of our national security architecture have been slow to recognize the emerging security environment. Our focus has remained on traditional weapons platforms, and institutions and processes designed in the middle of the last century to accommodate what was perceived as a simple world of kinetics and traditional domains, which guided legacy operations. We need to supplement our focus on combined arms warfare with a broader lens that better accommodates such elements as non-kinetic tools, emerging technologies, and the cyber domain.

Excessive emphasis on traditional weapons platforms associated with combined arms warfare runs the danger of dismissing emerging instruments of military power. We cannot relive the era of battleship admirals and cavalry generals dismissing aviation as a passing fad. We must keep an open mind regarding future possibilities.

Cornerstones of the US Military: The Services and Combatant Commands

Interservice rivalry is a vivid part of American military history, back to the earliest days of our republic. The most intense period of competition occurred at the close of World War II. Drawing on the lessons of the war and seeking to address years of political turmoil fueled by rivalries, President Truman prodded Congress to pass the National Security Act of 1947 and its first amendment in 1949. This legislation established the postwar defense organization for the United States. The legislation created the Department of Defense, intended to unify the separate Department of War and

Department of the Navy, and an independent air force as a third military department within DOD.

In 1958, legislation created the unified combatant commands—designated as the headquarters for the conduct of warfare. This goal remained theoretical for many years, though, with the services remaining dominant in all aspects of organization, training, equipping, and planning. Land, sea, and air forces tended to operate autonomously. Individual services developed weapons and equipment without regard to compatibility with other services. For example, equipment purchased by the Army and Navy could not be loaded into Air Force cargo planes, and each service had its own doctrine for employing aircraft.

Not until the Goldwater-Nichols Act of 1986 did this dynamic change. The law's passage was prompted when inter service dysfunction manifested tragic results during the 1980 Iranian hostage rescue mission and the flawed invasion of Grenada three years later. Reformers demanded a change to afford joint conduct of warfare. The act had no intent to erase the differences in service philosophy and cultures, but intended for the unique characteristics and strengths of each service to be shaped to complement one another, making US military power greater than the sum of its parts. Thus, so-called "jointness" became the mantra of the armed forces after Goldwater-Nichols entered into law.

We need to move beyond interoperability to interdependency, making the service components rely on capabilities brought to the joint fight by other service components.

But what did Goldwater-Nichols accomplish? And what is the proper meaning of the term "jointness" to today's force?

The basics of the Goldwater-Nichols Act did alter how the services operate significantly, and still do to this day. The individual services no longer fought our nation's wars—the unified combatant commands do so under a designated joint task force (or JTF) commander. Two kinds of unified combatant commands emerged—regional and functional. The regional commands broke out into Pacific, European, Central, Southern, Africa, and Northern Commands (NORTHCOM was established after the 9/11 attacks). The functional commands are Transportation, Special Operations, and Strategic Commands. The services organize, train, and equip "service component forces" assigned to the unified combatant commands under a joint task force commander to conduct operations. In short, after Goldwater-Nichols, individual services no longer fight wars—they organize, train, and equip forces. The combatant commands became the main instruments of war under the unifying vision of a joint force commander.

Because of this approach, a separately developed and highly specialized array of capabilities is provided through service or functional components to a joint force commander—who must then assemble a plan from this menu of capabilities, depending on the scenario and need. This does not mean four separate services deploy to simply align under a single commander, nor does jointness mean all services necessarily get an equal share of the action. Jointness does not mean homogeneity. What is often misunderstood about joint operations is that their strength resides in the separateness of the services.

Joint force operations create synergies because they capitalize on each services' core functions—skill sets that require much time, effort, and focus to cultivate. It takes 20-25 years to develop a competent division commander, a surface action group commander, a Marine Expeditionary Force commander, or an Aerospace Expeditionary Force commander.

Through the joint approach to warfare, every contingency is different, and a joint approach allows a JTF commander to tailor-make an optimal and unique force to the contingency facing them. The service component make-up for Operation Desert Storm was very different from the one required for Operation Allied Force (the air war over Kosovo and Serbia). The force assembled for Operation Unified Assistance (the Southeast Asia Tsunami relief operation in December 2004) was very different than the one required for Operation Inherent Resolve (the current counter-Islamic State operation), and so on.

Since the passage of Goldwater-Nichols, a joint approach has intended to move contingency organizations and operations from independent, de-conflicted service approaches, to sustained interoperability.

But today, we need to move beyond interoperability to interdependency, making the service components rely on capabilities brought to the joint fight by other service components.

The services must shed their historical predilection for self-sufficiency, or "owning" all assets needed to fight and win independently. Joint task force operations create synergies because an interdependent approach allows each service to focus on, hone, and offer their core competencies. A service seeking to control all elements of war fighting is an unsustainable practice from a resource perspective and yields compromised capabilities. Control of all the capabilities in a contingency is the role of the combatant commanders when employing forces. If services invest and excel in their respective domains, the results will be far more effective.

… when a single service attempts to achieve warfighting independence instead of embracing interdependence, "jointness" unravels, warfighting effectiveness is reduced, and costly redundancies and gaps likely abound.

To be joint we require separate services, and it is an imperative that service members understand how to best exploit the advantages of operating in their domains. Articulating the virtues and values of a member's service is being "joint." However, when a single service attempts to achieve warfighting independence instead of embracing interdependence, "jointness" unravels, warfighting effectiveness is reduced, and costly redundancies and gaps likely abound. The last thing we need to do is turn back the clock on Goldwater-Nichols by allowing services to continue to develop redundant capabilities, rejecting the premise of joint warfighting.

The degree of jointness exhibited since 1986 has ebbed and flowed based on commanders in charge, and to the degree that top US military leaders have encouraged joint organization and execution. There are many examples of this phenomenon to draw on. I have been blessed with a career that brought me into multiple joint and combined operations that were then interspersed with headquarters assignments and congressional commissions, each focused on joint warfighting and organization. I learned key lessons from each one of these experiences.

Twenty-five years ago, I served as the attack planner for air operations in Operation Desert Storm. I did not care what service or country insignia was painted on the side of an airplane in constructing strikes; it was capability that mattered. What kind of weapons could they deliver—dumb bombs or precision munitions? How long could they stay on station? Did they require airborne refueling? Could they defend themselves?

In one instance, I wanted to use the Army Tactical Missile System (ATACMS) to suppress enemy surface-to-air missiles (SAMs) to eliminate the threat these systems presented to our attack aircraft. Army commanders denied the request claiming the ATACMS were service assets and they needed to "save" them for use by the Army later in the war. I did not argue with the requirement, only the parochial solution. Parochial Army "ownership" of that capability prevented a valuable application of it in a joint context. Today we have matured in the context of joint use of ATACMS as evidenced by its incorporation in the integrated planning of potential operations in places like South Korea.

But the underlying question remains: Why are services procuring weapons to achieve effects already possessed by another service? Today's variant of this situation is evident with the overlap among the branches with medium/high altitude unmanned aerial vehicles—also known as remote piloted aircraft (RPAs), or drones. In another example, the Marines were dogmatic about who and how "their" aircraft would be tasked in Desert Storm. This was the first major combat operation since the passage of the Goldwater-Nichols Act. Much was at stake between those who held on to old ways of service fighting and those taking a joint approach. USAF Lt Gen Chuck Horner—the first joint force air component commander—stated that if you were going to fly you had to be on the air tasking order to support the entire joint effort. That meant your tasking would be accomplished in a unified manner as part of a theater-wide plan.

The Marines disagreed, and came up with ingenious ways to ignore joint requirements and pursue their own objectives. To get into the combat zone as an aircraft you needed to transmit a specific identification code known as IFF. One day, the Marine in my planning organization told

me the Marine air wing would use their aircraft as their wing commander wanted, vice what the joint force air component commander planned. They would pick a two-ship that was planned to attack a particular target in the area of operations, and subsequently use the same IFF code to surreptitiously allow 24 Marine Corps aircraft to gain access into the combat area, and engage outside of joint command and control. This undermined the intent of unified joint air operations.

The Marines have now codified in "joint" doctrine that they do not have to support joint force air component commander-assigned missions until all Marine requirements are satisfied. Then, and only then, will Marine aircraft engage in support of joint operations. With unparalleled skill in bureaucratic maneuvering, the Marine Corps have actually ensconced their parochial position on aircraft in their inventory into joint doctrine. However, the United States engages in combat to defend its national interests, not service interests, and our doctrine needs to reflect this.

The only way we will be able to consider alternate strategies and improve available courses of actions is to apply the joint process as it was intended. Otherwise, we will get locked into dogmatic courses aligning with a single service's view of the world …

In the opening nights of Operation Enduring Freedom (OEF) in late 2001, I served as the director of the Combined Air Operations Center (CAOC) conducting air operations over Afghanistan. We had planners from all the services in the CAOC, and I was glad to find there was a tangible and positive difference in service component cooperation and teamwork in this operation, compared to Desert Storm.

One night the commander of the carrier air group who was working as the Navy liaison to the aircraft carrier operating in support of OEF, without having to be asked, had the weapons reconfigured on the aircraft carrier deck to BLU-109 penetrating bomb bodies. The Navy liaison was looking at these assets as part of a broader joint enterprise and knew the nature of the targets the joint air operations would be flying against. Though seemingly not a big deal, it was an indicator that this individual was so attuned to the rapidly changing battle plan that he initiated necessary changes to facilitate combat operations without waiting or being asked. This sort of cooperative attitude is what ensures victory.

There are many stories like these—demonstrating both good and bad examples of jointness. Unfortunately, since the beginning of the second phase of OEF and Operation Iraqi Freedom (OIF) in 2003, we have moved further from the intent of Goldwater-Nichols than closer to it.

The military never established a true joint command organization in Afghanistan or Iraq, in hindsight. The US Central Command (CENTCOM) leadership merely put a "J" in front of established Army organizations, passing them off as a "joint task force." One only has to look at the organizational diagram for Operation Anaconda (an engagement in OEF which took place in early 2002) and compare that chart with the organizational diagram of the 10th Mountain Division deployed. There is no difference except the title of the chart. This trend popped up elsewhere where US forces were engaged. There was a Multi-National Corps-Iraq (MNC-I), but no Joint Task Force-Iraq. In Afghanistan, an International Security Assistance Force (ISAF) was formed, and an organization called US Forces Afghanistan (USF-A), but these organizations had no service components. This presented a major problem because it inhibited true collaborative, cooperative strategy development and execution at the operational and tactical levels.

The only way we will be able to consider alternate strategies and improve available courses of actions is to apply the joint process as it was intended. Otherwise, we will get locked into dogmatic courses aligning with a single service's view of the world, not a balanced enterprise approach.

We are repeating this single service dominance again with CENTCOM's organizational structure associated with Operation Inherent Resolve (OIR). The President has clearly stated that there will be no combat operations on the ground in either Iraq or Syria performed by US Army or Marine ground forces. US ground forces in the region will only act in an advise and assist capacity. The only direct application of US military force in the region is airpower, but the designated JTF commander for OIR was originally CENTCOM's Army component commander, recently replaced

by a different Army three-star general. How does this organizational arrangement optimize force employment when the service component with the preponderance of force and expertise (the US Air Force) in the application of combat airpower is not in command? We would never ask an infantry officer to get into an F-15 and execute a combat mission, so why are we executing this fallacy at the strategic level?

Functional versus service component command organizations aim to optimize our military effects regardless of which service component provides them. First employed in Operation Desert Storm, the Joint Force Air Component Commander (JFACC) could care less about what service owned a given aircraft. The operative means of including or excluding a particular service aircraft in attack plans was determined by the capability the aircraft provided, not the service providing said aircraft. This is the essence of joint warfare.

From 2006 to early 2010, there were no US Air Force officers in any of the top 11 positions in the Pentagon—the chairman, the vice chairman, the director, the J-1, 2, 3, 4, 5, 6, 7, or 8 on the Joint Staff …

To date, Joint Force Land Component Commanders (JFLCCs) do not perform this type of integration. In OIF back in 2003, while there was a nominal JFLCC, the Marines proceed up Iraq on the east side of the Euphrates, and the Army on the west. That was deconfliction, not integration. A Joint Force Maritime Component Commander (JFMCC) does not really execute joint command—unless combined with another nation's ships—because only the Navy possesses combat ships.

However, while Air Force officers are perhaps the most joint of all the services (as almost half the Air Force budget goes to enabling other military services), they have been historically excluded from joint command and staff positions. To optimize the solutions our military provides to the nation, it is imperative that the options of exploiting the dimensions of air, space, and cyberspace be well understood and considered in military course of action development, planning, and execution.

The military can't do any of those activities if Air Force leadership is absent from the key military organizations involved. To put this in context, here are the facts why this is an issue, and requires attention. From 2006 to early 2010, there were no US Air Force officers in any of the top 11 positions in the Pentagon—the chairman, the vice chairman, the director, the J-1, 2, 3, 4, 5, 6, 7, or 8 on the Joint Staff—almost 4 years with no leadership position on the joint staff.

A look at the historical record of how the Air Force has fared in command assignments in the combatant commands is quite revealing. Since the establishment of regional combatant commands in January 1947, there have been a total of 105 commanders—only six have been Air Force officers. This amounts to less than six percent of the regional combatant commanders in the history of the Department of Defense coming from the ranks of the Air Force. There is a story behind those statistics, and it is not a good one from a joint perspective. The issue here is not simply that the Air Force has not been given its "fair share" of joint task force command assignments, but that far more than just six percent of those areas of responsibility could have benefited from an air-centric perspective, as is the case in today's fight against the Islamic State. Furthermore, the Air Force needs to look at itself in the mirror in this regard to appreciate more honestly how it grooms, selects, and offers officers for these critical positions. The situation involves more than just other-service prejudice and turf protection.

There is a very real difference of having a surface commander in command who believes all the other service components exist to provide support for land operations, and a truly joint warfighting organization that seeks to build the best strategy without regard to domain or service. The best way to secure this outcome is engendering truly joint processes where Soldiers, Sailors, Marines, and Airmen offer their expertise and perspectives to contribute to the objective defined by a joint force commander. However, all the formal doctrine, manuals, and agreed joint principles and practices will be of no practical impact and worth without COCOM and JTF commanders prepared and determined to do the right thing in the national interest over their service interests.

It can be accomplished. Desert Storm serves as a teachable moment in jointness even 25 years later. Gen Norman Schwarzkopf still stands as an

example of an Army general who commanded a successful and effective joint operation, with a joint perspective.

The US Air Force and National Security

Given the severity of the financial pressures facing the United States, it is important to reflect on why we maintain an independent Air Force. Services do not exist for their own benefit—they must serve as effective and valuable tools to implement American interests around the globe.

The strategic narrative of the Air Force is to provide our nation global initiative. The Air Force has codified its strategic objectives as the ability to provide "Global Vigilance, Global Reach, and Global Power." The initiative enabled by these tenets emphasizes not only the agility of airpower's capabilities, but also the flexibility they provide to civilian leaders.

Essentially, the Air Force is a capabilities-based force, and thus makes the service the nation's strategic hedge against future challenges. This is a highly desirable characteristic, considering defense leaders terrible track record of predicting future challenges and threats.

Evolved aerospace power has fundamentally altered the way the United States might best fight any future large-scale engagements. It has the ability to perform war-fighting functions at less cost, with lower risk, and do so more rapidly than traditional ground force elements.

Five unique contributions define the US Air Force in the context of the service's strategic objectives. First, gaining control of air, space, and cyberspace; second, holding targets at risk around the world; third, providing responsive global integrated ISR; fourth, rapidly transporting people and equipment across the globe; and fifth, underpinning each of these unique contributions with robust, reliable, and redundant global command and control. However, the most important core competency of the Air Force pervades all of these contributions—innovative thinking, the kind of thinking that manifests itself in our Airmen over the history of the Air Force. As Air Force airmen, we embrace the ability to rise above the constraints of terrain, literally, and to transcend the strictures of horizontal perspectives.

Before modern military airpower, wars were fought by strategies that hinged upon attrition, annihilation, and/or occupation. Surface warfare climaxed in World War I, with ground forces launching successive attacks over a narrow band of territory for nearly half a decade. The cost in lives and resources was overwhelming. Pioneering aviators, flying over the battlefields, realized the air domain afforded an alternate path to secure victory. Instead of fighting foot-by-foot to capture enemy territory in a linear fashion, airmen could fly past opposing forces to strike critical centers of gravity, as well as over opposing forces to present them a maneuver force from above. Deprived of the means to sustain their fight, and coming under attack from above, an adversary could be weakened to ultimately face defeat.

Turning the potential of this approach into reality took many years, resulting in countless lessons learned and stimulating tremendous technological innovation. Throughout it all, Airmen remained fixed on their objective: providing our country's leaders with policy options to secure goals effectively and efficiently, without projecting unnecessary vulnerability. The same vision holds true for the men and women serving in today's Air Force.

This capability has transformed modern war. Noted airpower expert Ben Lambeth has astutely observed that today, "when it comes to major conventional war against modern mechanized opponents, the classic roles of air and land power have switched places. Fixed-wing air power has, by now, proven itself to be far more effective than ground combat capabilities in creating the necessary conditions for rapid offensive success." Validating Lambeth's observation, Nathaniel Fick, a Marine platoon leader during OIF in 2003 at the leading edge of the push to Baghdad, wrote that for the next few hundred miles "all the way to the gates of Baghdad, every palm grove hid Iraqi armor, every field an artillery battery, and every alley an antiaircraft gun or surface-to-air missile launcher," he said in his 2005 book *One Bullet Away: The Making of a Marine* Officer. "But we never fired a shot. We saw the full effect of American airpower. Every one of those fearsome weapons was a blackened hulk."

Evolved aerospace power has fundamentally altered the way the United States might best fight any future large-scale engagements. It has the

ability to perform war-fighting functions at less cost, with lower risk, and do so more rapidly than traditional ground force elements. Most notable in this regard is modern airpower's demonstrated ability to neutralize an enemy's army while incurring a minimum of friendly casualties, and to establish the conditions for achieving strategic goals almost from the outset of fighting. Reduced to basics, modern airpower now allows JTF commanders and their subordinate units both freedom from attack and freedom to attack.

Air Force aerospace power will inevitably be pivotal in future wars. This is by far the most preeminent unifying theme emerging from the collective global combat experiences of the last quarter century.

Aerospace power is based on the characteristics of technology—but the invention, development, and application of those instruments flow from human imagination and knowledge. The Air Force seizes on the virtues of air, space, and cyberspace to project power without projecting the same degree of vulnerability as operations in other domains. As a result, it provides our nation with strategic alternatives simply not available by any other means.

Global and theater aerospace power alone can conduct genuine parallel attacks—bringing multiple strategic and operational level centers of gravity under near simultaneous attack. It is through the use of parallel attack it becomes possible to keep military operations short. Short wars brought about through parallel attack are dramatically less expensive in dollars and lives. Short is good, long is bad when it comes to war—or any other kind of strategic competition. Short should be the criteria for going to war and for executing it. Unfortunately, parallel operations and time compression can be difficult to explain and sell to those not versed in these ideas. This will be a challenge that must be overcome for both planning and development of a future force structure capable of parallel attack.

Aerospace options provided by the Air Force shape, deter, and dissuade. They also help us attain fundamental national interests, by minimizing the need for combat operations around the world through collaborative engagement with partner nations, deterring potential adversaries, and reassuring allies that we will protect them with credible capabilities should the need arise. When combat is necessary, aerospace capabilities yield a variety of strategic, operational, and tactical effects, which provide disproportionate advantages.

These advantages pervade the American way of war. Today, our joint forces have the highest battlefield survivability rates not only because of advances in medicine, but also due to our ability to rapidly get our wounded to critical care facilities by air. Today, unlike the contests of the past, our joint forces go into combat with more information about the threat they face, and have better situational awareness provided in near real-time—and they get that information from air, space, and cyberspace.

Today, unlike the past, our joint task forces are able to operate with much smaller numbers, across great distances, and over inhospitable terrain because they can be sustained over time—by air. Today, navigation and precise location anywhere on the surface of the earth for application in both peace and war is provided by an Air Force GPS constellation—from space. Today, not only do surface forces receive firepower from the Air Force when they need it, but the adversaries our nation views as the greatest threat to our security are being eliminated by direct attack—from the air.

Air Force aerospace power will inevitably be pivotal in future wars. This is by far the most preeminent unifying theme emerging from the collective global combat experiences of the last quarter century. Following Operation Desert Storm in 1991, Operations Deliberate Force and Allied Force saw airpower called into action in the Balkans in 1995 and 1999. Airpower again was critical to success during the major combat phases of OEF in Afghanistan in 2001 and OIF in Iraq in 2003. Airpower was called upon to act in both Operations Odyssey Dawn and Operation Unified Protector over Libya in 2011, and most recently, counter-Islamic State operations in Syria and resumed operations in Iraq. These operations underline the fact that the Air Force has been at war not just since September 2001, but since 1991—more than 25 years of combat and military operations. Because of this, the nature of the modern security environment demands we focus on not just sustaining, but accelerating Air Force contributions. Whether providing stand-alone options or serving as an integral part of joint operations, the Air Force is a vital national asset. Modern combat operations

are simply not feasible without the capabilities afforded by the Air Force.

Our nation has three services that possess air arms—the Army, Navy, and Marine Corps. Those air arms primarily exist to facilitate their parent services' core functions—their mastery of operations on the ground, at sea, or in a littoral environment. While the other branches of the US military have localized air arms suited to supporting their respective activities, only the US Air Force possesses the capabilities and capacity required to facilitate global operations anytime, anywhere—and the perspective to exploit those capabilities in a way no other armed service is organized, trained, and equipped to provide.

Our nation, in short, has only one Air Force. Its reason for being is to exploit the global advantages of operating in the third dimension of air, space, and cyberspace to directly achieve our security objectives around the world. It is this unique and specific focus of the Air Force that makes aerospace power America's asymmetric advantage.

The Rationale for a 21st Century Commission on Roles and Missions

To move the armed forces from interoperability to interdependency requires a much more clearly delineated assignment of roles and functions than exists today. Today we are operating the same military service constructs that originated from the National Security Act of 1947. But much has changed in the national security bureaucracy since then. For example, defense agencies have exploded since that time frame, as have the bureaucracies of the service secretariats; the Office of the Secretary of Defense staff; and the Joint Staff, as well as the oversight of DOD by Congress.

Today we are operating the same military service constructs that originated from the National Security Act of 1947. But much has changed in the national security bureaucracy since then.

There have been a multitude of roles and missions reviews since 1947—some substantive, others cursory. The current roles and missions of the armed forces are codified in DOD Directive 5100.01, *Functions of the Department of Defense and Its Major Components.* Although the current version was updated in 2010, it does not provide the kind of distinction among service functions that the current budget, technological capabilities, threat, and strategic environment the information age demands.

A quick look at the section in the current DOD Directive 5100.01, titled *Common Military Service Functions,* is revealing:

> h. Organize, train, and equip forces to contribute unique service capabilities to the joint force commander to conduct the following functions across all domains, including land, maritime, air, space, and cyberspace:
>
> 1. Intelligence, surveillance, reconnaissance (ISR), and information operations, to include electronic warfare and MISO in order to provide situational awareness and enable decision superiority across the range of military operations.
> 2. Offensive and defensive cyberspace operations to achieve cyberspace superiority in coordination with the other Military Services, Combatant Commands, and USG departments and agencies.
> 3. Special operations in coordination with USSOCOM and other Combatant Commands, the Military Services, and other DOD Components.
> 4. Personnel recovery operations in coordination with USSOCOM and other Combatant Commands, the Military Services, and other DOD Components.
> 5. Counter weapons of mass destruction.
> 6. Building partnership capacity/security force assistance operations.
> 7. Forcible entry operations.
> 8. Missile Defense.
> 9. Other functions as assigned, such as Presidential support and antiterrorism.

Given present resource constraints, we can no longer afford such overlap. A dollar spent in a redundant, ineffective fashion comes at the expense of necessary capability. Military leaders are presently balancing an unprecedented number of high-demand, low-density capabilities. The only way to help address these shortfalls is to improve the way we organize, command, equip, and oversee our military forces. Ensuring each of the military services is best aligned to conduct operations in their respective domains in austere budget conditions, a burgeoning global threat environment, and the new realities of the information age demands that we reassess present roles, missions, and organizations.

Critical Issues for Review

Over the last quarter century, I have been privileged to participate in several defense reviews tackling these very issues, starting with what was called the "Base Force" review in 1990; the "Bottom-Up Review" of 1993; the Commissions on Roles and Mission of the Armed Forces in 1994 and 1995; the first Quadrennial Defense Review (QDR) in 1997; and the first National Defense Panel. I also directed the Air Force QDR effort in 2000-2001, and advised and informed the subsequent defense reviews during the remainder of my career on active duty.

Between those activities, I was also assigned to participate in multiple contingency operations that afforded a variety of real-world perspectives on these matters. First as the principal attack planner for the Desert Storm air campaign, then several years later I served as the Joint Task Force commander for no-fly zone operations over Iraq in the late 1990s. After September 2001, I served as the first director of the air campaign over Afghanistan, then was twice assigned as a JTF commander; and served as the air commander for the 2005 Southeast Asia tsunami relief effort, Operation Unified Assistance. My last assignment on active duty was as the Air Force's first deputy chief of staff for intelligence, surveillance, and reconnaissance (ISR), where I led the effort to orchestrate the largest increase in RPA operations in Air Force history.

Fundamental change in the roles and functions of the Armed Forces can only come from congressional legislation and direction.

After the past quarter century of experiences, I have come to the conclusion that fundamental change in the roles and functions of the Armed Forces can only come from congressional legislation and direction. Men and women in uniform can play a vital role, however, to help share insights and perspectives regarding the present state of affairs, where change is needed, and avenues for positive reform. Ultimately, I believe we need to seriously consider the establishment of a "Commission on Roles and Missions in the 21st Century" that may ultimately inform a revision to the National Security Act.

In that regard, I offer the following 15 topics for consideration if such an effort is to take place, as areas we must focus on if these reforms are to succeed:

1. Congress: The congressional armed services committees could lead the way on defense reform if they mirrored 21st century capabilities versus a historic model that is reflective of last century military organization. Seapower is currently afforded its own subcommittee; land and air power are batched together and named after a Cold War Army doctrine (the Airland subcommittees); and no subcommittees are dedicated to cyber or space. Congress has the power to make changes to these arrangements, to enhance oversight and focus in the all of the critical areas of defense in the 21st century. For example, splitting the Airland Subcommittee into subcommittees on aerospace power, and another on land power, would enhance congressional oversight and expertise, as well as the creation of a subcommittee on cyber operations.

2. Cyber: As a somewhat "manmade" domain, cyber is fundamentally different from the natural domains of air, land, sea, and space. The linear aspects of the traditional domains remain important, but our national security predicament cannot be understood in a holistic sense without an appreciation for the complicated world of cyber. Nor can instruments from the cyber domain achieve their full potential as tools of foreign policy if they are simply filtered through the institutional command channels of traditional domains, including space. Cyber instruments can be useful in making traditional instruments of power more effective and should be utilized for this purpose. However, as is now demonstrated on a continuing basis by our opponents, they also have autonomous potential for serving foreign policy goals independent from air, land, sea, and space tools. It is readily apparent the private sector has moved far ahead of DOD in advancing cyber technology in response to consumer demand. DOD is no longer the dominating production and marketing force.

Against this background, all the services must consider how to engage more effectively in public-private ventures with leading technology entities. Our potential "wingmen" in the cyber domain represent a very different culture from the profession of arms. We must learn to accommodate this culture on a partnership basis or, alternatively, accept the necessity for a substantial new non-mil-

itary enterprise to create and command a force structure for deterring and operating cyber military instruments. Either alternative requires that the military supplement its traditional focus on combined arms warfare with increased emphasis on the holistic need for desired effects—opening the door to an increased appreciation for non-kinetic military tools, particularly in the cyber domain.

Today's cyberspace operations beg for more unification. Accordingly, it would be appropriate and useful to consider adapting US Cyber Command into a unified command along the lines and model of US Special Operations Command (SOCOM). Each service would provide component expertise to the unified command from their unique domain perspectives. At the same time, the unified cyber command could begin to establish long needed policy guidelines in this domain, which are badly needed to establish cyber deterrence, and more effectively normalize fundamental cyber operations in contingency and operations plans.

3. Space and Information: Though some claim not much benefit would come from standing up a separate space service, there may be value in doing so at some point in the future. We may arrive at that juncture when our activities in space move from a predominant focus on what is occurring inside the atmosphere of the earth to a greater set of activities focused outside our atmosphere. Human conflict remains on land, at sea, and in the air. Space is critical to the success in the domains of sea, land, and air, but lethal combat today remains inside Earth's atmosphere. Until such lethal combat moves to space, there is little need for a separate space service.

Space effects must be seamlessly integrated with other domains in order to effectively fight and win. It happens best when integrated with the service components responsible for building the forces to fight and win.

Space effects must be seamlessly integrated with other domains in order to effectively fight and win. It happens best when integrated with the service components responsible for building the forces to fight and win. Creating a separate service would actually encourage investment in space for the benefit of the space service alone vice optimizing investment in the domains where warfighting occurs.

Why does each service maintain its own space command? The answer is simple yet complicated—simple because each service is critically dependent on space, therefore a service needs some level of internal space expertise, and a component is the best way to secure it. This is complicated, though, because such an approach creates inefficiencies and sub-optimal concepts of operations. For example, we have chosen to make a joint area of "expertise" satellite communications (SATCOM). Accordingly, each service develops its own SATCOM systems. However, in a fight, we cannot effectively fight SATCOM due to these separate service responsibilities. The US presently turns to a defense agency, Defense Information Systems Agency (DISA), to "fight" SATCOM, a ludicrous construct, but accepted in the name of jointness.

Because it controls the preponderance of military spacecraft, the US Air Force should be the single lead service for operational test and evaluation of all space capabilities, and the other services should have an "information command" that focuses on integrating all information effects, regardless of domain (ISR, space and cyber). The Air Force should have such a command ("vigilance command") to integrate ISR, cyber, and space operations. The key to success will be integrating information to achieve information superiority, the true key to winning future conflict. The sooner the Air Force stands up a vigilance command the quicker we will be able to adapt to the challenges of the information age.

There are also those who believe the US would benefit from a separate "space force," with a relationship to the Air Force analogous to the Marine Corps' relationship with the Department of the Navy. Among the benefits of this option is that if properly organized, the space force would have responsibility for ballistic missile defense, thus the Missile Defense Agency could be dismantled. Ballistic missile defense would be integrated with medium to high altitude air defense in this model, so the Army would have to give up its PATRIOT air defense systems (and their successor system) into any newly created "US Space Force." The Army would still be responsible for close-in air defense with its own man-portable or truck-mounted mobile missile systems, but strategic, and theater-wide air and missile defense would migrate to the new

space force. This could prove very beneficial in terms of our ability to integrate manned interceptor air defense with ground-based theater air defenses. With a single space-focused service given responsibility for ballistic missile defense, there would be institutional backing to find practical solutions to the challenges posed by ballistic missile proliferation. Both of these alternatives described above deserve a comprehensive review that only a new commission on roles and missions could provide.

4. Personnel: We must change force management from a system that values risk avoidance in decision-making to one that accepts risk tolerance as a minimum, and rewards innovative thinking. We need to create a culture and environment that encourages innovative thinking instead of discouraging it. More bureaucracy in the Pentagon, and in various headquarters staffs does not help combat capability. The Pentagon that won World War II, it should be noted, was far smaller than the present enterprise.

5. Concepts of Operation: The United States military is facing another technology-driven inflection point that will fundamentally reshape what it means to project power. Advancements in computing and network capabilities are empowering information's ascent as a dominant factor in warfare. In the past, the focus of warfare was predominantly on managing the physical elements of a conflict in the traditional domains of air, sea, and land. In the future, success in warfare will come to those who shift focus from a loosely federated construct of force application systems to a highly integrated enterprise collaboratively leveraging the broad exchange of information.

We need to eliminate the ponderous, and excessively regulated acquisition processes that hinder innovation, increase cost, lengthen delivery times, and inhibit effectiveness.

Said another way, desired effects will increasingly be generated through the interaction of multiple systems, each one sharing information and empowering one another for a common purpose. This phenomenon is not restricted to an individual technology or system, nor is it isolated to a specific service, domain or task. It is a concept that can loosely be envisioned as a "Combat Cloud"—an operating paradigm where the preeminent combat systems of the past become elements in a holistic enterprise where information, data management systems, and command and control practices become the core mission priorities.

Our military needs to learn better how to rapidly adapt new technology to the concepts of operation that technology enables. We need to realize and exploit the advantages of modern weapon systems and information age technology to build new concepts of operation; and we need to also realize that innovation can be applied to organization as well as from technology.

To fully capitalize on these capabilities will require a new design for our forces. We have to think outside of the organizational constructs that history has etched into our collective psyche. Network-centric, interdependent, and functionally integrated operations are the keys to future military success. The future needs an agile operational framework for the integrated employment of US and allied military power. It means taking the next step in shifting away from a structure of segregated land, air, or sea warfare to integrated operations based on the four functions of ISR, strike, maneuver, and sustainment.

We need to link aerospace and information-age capabilities with sea and land-based means to create an omni-present defense complex that is self-forming, and if attacked, self-healing. This kind of a complex would be so difficult to disrupt that it would possess a deterrent effect wherever it would be employed. The central idea is cross-domain synergy, or the complementary vice merely additive employment of capabilities in different domains that enhances the effectiveness, and compensates for the vulnerabilities, of the others. This ubiquitous and seamless sharing of information, will form the basis of the so-called "Third Offset Strategy."

A tremendous strategic advantage will accrue to us if we exploit organizational innovation to develop an ISR-Strike-Maneuver-Sustainment Complex. This complex is not just about "things." It is about integrating existing and future capabilities within an agile operational framework guided by human understanding. It is an intellectual construct with technological infrastructure.

6. Process: The nature of large institutions is inhibiting rapid, decisive action that is required for success in the information age. We need to eliminate the ponderous, and excessively regulated acquisition processes that hinder innovation, increase cost, lengthen delivery times, and inhibit effectiveness. There is perhaps not a better advocate for reversing these burdens than the current Secretary of Defense, Ash Carter, as he has spoken repeatedly on the need to reform this aspect of DOD.

However, a recent example that illustrates our ponderous process is the drawn out decision-making on the Long-Range Strike Bomber (LRS-B) award, a process that played out longer than it should have. The DOD has to learn how to make decisions quicker, and reverse the trend of adding expense and time by paying so much attention to 'process' as opposed to 'product.' Much of the delay on the LRS-B was driven by exquisite attention to excessive procurement rules and regulations, animated by greater concern with avoiding litigation than moving on with the development of a critically needed capability.

The DOD has fundamental difficulty in making force structure decisions that optimize cost-effectiveness. It limits alternatives to "stovepipes," unique capabilities restricted to similar platforms or within individual service budgets, rather than evaluating joint capability to achieve a particular effect across the spectrum of possible contributors regardless of service. While attempts to deal with this challenge have been instituted and exist today in the form of the Joint Requirements Oversight Council (JROC) and Joint Capabilities Integration and Development System (JCIDS) process, they more often than not result in less than satisfying "lowest common denominator" outcomes, over extended periods of time.

One way ahead is to change the primary measure of merit in program decisions from individual unit cost to value, or cost per desired effect. Cost per unit is often used as a measure of merit in making procurement decisions. A more accurate measure of merit that captures real value or capability of a particular system is cost per target engaged, or better yet, cost per desired effect. In this fashion one is led to consider all the elements required to achieve a specific goal.

We also need to think holistically about how we manage force constitution and acquisition. We simply cannot afford everything we want. We must prioritize. An option to be explored to optimally do that is to look at assessing the strategy via risk. What training, equipment, personnel expertise, etc. does it take to manifest various strategic options and how long does it take to constitute such capacity? I think the nation needs both Soldiers and submarines to execute the defense strategy. However, given our limited resources, perhaps we need to take increased risk with force structure that we can reconstitute with relative speed and ease. We can recruit and train Soldiers and Marines in a matter of months. It takes years to build a submarine and some of their key personnel. Such realities ought to be considered in the Pentagon and Capitol Hill. Present budget allocations do not show this realization.

When managing forces in a period of austerity, we need to focus on the most complex capabilities that yield the US its asymmetric advantages, while also retaining enough capacity and intellectual capability to surge the areas that allow for taking higher risk.

7. Terminology: We need to think beyond the constraints that traditional military culture imposes on new technology. For example, 5th generation aircraft such as the F-22 and F-35 are termed "fighters," but technologically, are not just "fighters"—they are F-, A-, B-, E-, EA, RC, AWACS-22s and 35s. Similarly, the new "Long-Range Strike Bomber (LRS-B)" will possess capabilities much greater than the "bombers" of the past.

These new aircraft are actually more properly described as flying "sensor-shooters" that will allow us to conduct information age warfare inside a contested battlespace whenever we desire—if we fully exploit their "non-traditional" capabilities to the degree that those capabilities become accepted as the new "traditional."

Modern sensor-shooter aircraft enable the kind of interdependency described earlier. They are key elements in enabling US and allied forces to work in an interdependent manner throughout the extended battlespace to deliver the effects or outcomes that are necessary for deterrence as well as war fighting dominance.

With the already demonstrated capability of the F-22 to provide multi-tasking capabilities, including command and control (C2) for an engaged force, the ability to provide for C2 in an extended battlespace will be enhanced with the coming of the F-35 and the LRS-B, which are not simply replacements for old aircraft, but part of the C2 dynamics crucial to an ability to fight and prevail in challenging battlespace. Whereas adversaries are working towards trying to shape Anti-Access/Area Denial (A2/AD) tools, tools US and coalition forces must shape their capabilities to render these A2/AD capabilities ineffective.

8. Remotely Piloted Aircraft: Service mission sets need to be realigned to minimize duplication of effort and allow resource concentration to secure maximum value. A prime example in this regard lies with Remotely Piloted Aircraft (RPAs)—commonly called drones. As we move into a more fiscally constrained future we need to seek ways to optimize the effectiveness of all our medium and high altitude RPAs for the benefit of our joint warfighters. The Joint Staff's Joint Publication 2.0, *Intelligence Support to Joint Operations* states that because "intelligence needs will always exceed intelligence capabilities, prioritization of efforts and ISR resource allocation are vital aspects of intelligence planning." Most would agree that demand for RPA exceeds supply and will continue to exceed it even after the services build all their programmed drones.

As a result of modern telecommunications, and the ability to rapidly transmit information to, from, and between various levels of command, there are many examples of "information age" operations where tactical level decision-making was usurped by commanders at the operational and even strategic levels.

This reinforces the notion that the best possible way to get ISR from medium and high altitude RPAs to our joint warriors is by allocating the capability to where it is needed most across the entire theater. It argues against assigning medium/high altitude RPAs organically to individual tactical units that preclude their benefit to the entire theater joint fight. Consider an analogy of a city made up of 50 blocks, where the mayor owns five fire trucks. If the mayor designated one truck to one block, those five fire trucks would be assigned to only five blocks. A joint approach would leave it up to the mayor—or joint force commander—where to allocate the five fire trucks based on which blocks needed them most.

Today, every Air Force operationally designated medium- and high-altitude RPA dedicated to CENTCOM is at the disposal of the joint task force commanders. There are no such things as Air Force targets—there are only targets that are part of the joint campaign. That is not the manner in which Army or Navy possessed medium and high-altitude drones are employed. At some point medium/high altitude RPAs will be allocated to theaters other than CENTCOM—perhaps in locations without a significant US military presence. Now, the Army assigns its medium altitude RPAs to individual units, which means if that unit is not in the war zone then neither are the RPAs. A joint approach applicable in any region of the world is already part of all combatant commands joint force air component operational concepts.

The designation of an executive agency for medium-and high-altitude RPA to oversee the standardization of all RPA that operate above a coordinating altitude; and lead research, development, test, evaluation and procurement of these systems, will be more efficient and cost effective than individual services duplicating their efforts. This is an acquisition area in which DOD could realize tremendous dollar savings, and deserves reappraisal in this era of constrained resources.

The objective of a joint approach is to get medium-and high-altitude RPA ISR distribution to be as transparent as the Global Positioning Satellite (GPS) signal is to all the services. GPS is 100 percent owned by the Air Force, and 100 percent operated by the Air Force, and yet it is used by all the service components without any concern. We can do that with medium- and high-altitude RPA.

It is instructive to note how medium- and high-altitude RPAs can be used in a joint context. Air Force component provided RPA are routinely tasked to conduct tactical operations for our forces on the ground. During an operation as part of OIF, when a sniper was pinning down Marine ground forces in Iraq, a Predator RPA flown by Air Force personnel from Nevada, spotted and identified the insurgent. The Predator delivered video of the sniper's location directly to a Marine controller in the fight, and he used that video to direct a Navy F/A-18 into the vicinity. Then the Navy jets' laser

bombs were guided to the enemy position by the Air Force MQ-1 Predator laser designation of the target, eliminating the sniper. This engagement took less than 2 minutes.

This is what joint warfare is all about, and a joint approach for the use of RPA is all about getting the most out of our ISR resources to increase this kind of capability for America's sons and daughters on the ground, at sea, and in the air, while promoting service interdependency, and the wisest use of US tax dollars.

9. Command and Control: While the increase in information velocity is enabling dramatic increases in the effectiveness of combat operations, there is also a downside. As a result of modern telecommunications, and the ability to rapidly transmit information to, from, and between various levels of command, there are many examples of "information age" operations where tactical level decision-making was usurped by commanders at the operational and even strategic levels. This devolution of the construct of centralized control—decentralized execution to one of centralized control—centralized execution has caused reduced effectiveness in accomplishing mission objectives.

Discipline is required to ensure "reachback" does not become "reachforward." Centralized control and centralized execution represents the failed Soviet command model that stifled initiative, induced delay, moved decision authority away from execution expertise, bred excessive caution, and encouraged risk aversion. The results of such a model against a more flexible command structure were evident in 1991, when Iraq applied unsuccessful Soviet-style C2 constructs against the US-led Coalition.

Higher level of commanders, who are unwilling to delegate execution authority to the echelon with the greatest relevant situational knowledge and control, suffer from their remote perspective, create discontinuity, and hamstring the capability of commanders at the tactical level to execute a coherent, purposeful strategic plan. Growing accessibility to information requires the restructure of command and control hierarchies to facilitate rapid engagement of perishable targets and capitalize on our technological advantage. Information synthesis and execution authority must be shifted to the lowest possible levels while senior commanders and staffs must discipline themselves to stay at the appropriate level of war.

The challenges of emerging threats, information velocity, and advanced technologies demand more than a mere evolution of current C2ISR paradigms, but rather a new approach that capitalizes on the opportunities inherent in those same challenges. We cannot expect to achieve future success through incremental enhancements to current C2 structures—that method evokes an industrial-age approach to warfare that has lost its currency and much of its meaning. The requirements of information age warfare demand not "spiral development," but modular, distributed technological maximization that permits and optimizes operational agility. That kind of agility will not be achievable without dramatic changes to our C2 CONOPS; our organizational paradigms for planning, processing, and executing joint operations; our acquisition processes; and a determined effort to match the results to the three critical challenges and opportunities, while simultaneously fitting them seamlessly into the context of joint and combined operations.

10. The Nuclear Triad: The nuclear triad remains critical to US security for five reasons: 1) It provides the needed survivable platforms of bombers, submarines and land based missiles to avoid dangerous instabilities that would come from a submarine only force that would reduce American nuclear assets to less than 10 targets; 2) It provides the needed flexibility of ICBM promptness, SLBM survivability, and bomber recall ability to hold at risk adversary targets across the nuclear and non-nuclear spectrum to give the President the necessary timely capability to stop aggression using the least force necessary; 3) It guards against technological surprise including an adversary finding our submarines at sea or markedly improving their air defenses; 4) It preserves the land-based ICBM leg of the Triad that with 400 silo based missiles presents an adversary with the impossible task of targeting the force by surprise; and 5) Provides a significant hedge that allows expansion of the force should current arms control limits be abandoned or should the global security environment become significantly worse.

11. Military Advice to the President: One of the downsides to the Goldwater Nichols Act—in terms of ensuring alternative courses of action

regarding matters of war are heard by the President—is that the act designated the Chairman of the Joint Chiefs of Staff (CJCS) the principal military advisor to the President. The next National Security Act should specifically give the service chiefs access to the President in order to stop the filtering of advice. An anecdote from planning Operation Desert Storm illustrates this point.

In the late fall of 1990, the President became aware that there was disagreement among the Joints Chiefs of Staff about plans for the war against Iraq. In response, he called a meeting at Camp David with the Joint Chiefs and others to be held just days after his request went out. Some of the air planners spent a considerable amount of time in those few days working with the Air Force Chief of Staff so that he would be prepared to make the airpower case that the war could be executed quickly and at a very low cost. The message got through, for in early January, the President asked just the Air Force chief and the Secretary of Defense to meet him at the White House where he asked the Air Force chief if he was still as confident as he had been at Camp David a few weeks previously. Receiving an affirmative response, he proceeded with the plans that led to an ultimatum to Iraq and commencement of the air-dominant war on the 16th of January.

In today's world the President rarely receives unfiltered advice; instead, the CJCS, accompanied and supervised by the Secretary of Defense, summarizes the views of the other service chiefs and then makes his own recommendations.

Although any military officer could have been involved in this type of discussion with the President, it is the Air Force professional that can give the clearest predictions as properly planned airpower operations connect directly and quickly to strategic objectives and are parallel in nature as opposed to the serial operations of land warfare where probabilities and costs are so difficult to forecast. These meetings not only illustrate the close connection of the airpower professional and the highest national objectives, but also suggest that the airpower professional has special and especially difficult roles to play in the current system of joint staff organization.

During World War II, four senior officers had generally open access to the President and they frequently presented him with ideas as divergent as Europe first verses Pacific first and with emphasis on aircraft production as opposed to tank production. The President, as commander-in-chief, then made the decisions he was charged to make, but did so having had unfiltered advice from military experts. In today's world the President rarely receives unfiltered advice; instead, the CJCS, accompanied and supervised by the Secretary of Defense, summarizes the views of the other service chiefs and then makes his own recommendations. Representation of views with which you disagree is very difficult at best. As there are very clear philosophical and operational differences (or should be) between land, sea, and air officers, the chance that the president will hear a clear exposition of the differences is small. Thus, the likelihood of an informed decision on such momentous issues as war and peace is unlikely.

This indeed was the situation in December of 1990 and had not the President learned of the significant disagreement within the JCS, decisions on the first Gulf War might have been far different. The role of the service leadership is to represent their perspectives forthrightly, and to be prepared to take the case to the highest leadership. This is not an easy charge in today's world, but it is one essential to accept. Ideally, however, there needs to be a serious reconsideration of our defense leadership structure and the service military leadership should be at the forefront with proposals and arguments.

12. Joint Training: The past nearly 25 years of continuous combat operations have made the services the most joint capable forces in the world in conducting joint operations. But as we draw down our combat operations and the services move back into garrison, the CJCS must be given the authority and the accountability for designing and directing aggressive and continuing joint training exercises and experiments. In the absence of that kind of effort, the services will retreat to their primary focus on using their limited resources to develop their service required skills and exercises and "joint" operations will become an after thought.

13. Unit Organization, Training, and Equipping: One of the treasured principles of US Code, Title 10 is the service prerogative to determine their own methods for "organizing, training and equipping" their forces and then defining how they will present those forces to a combatant commander who then has the authority, by the provisions inherent in the definition of "operation-

al control" to reconfigure, reassign and combine organizations to meet his war fighting needs. Clearly those authorities are exercised with great caution because the combatant commander must weigh the risks associated with altering the basic structure of a combat unit to the opportunities for success by doing so to present a more capable warfighting force.

This is often done, however, in the rear areas of operations, with logistics, administrative, security, communications, personnel, civil engineering, and other enabling capabilities. If the combatant commander has the authority to overrule the services in the way he may organize his gained forces, and by law, may direct the training regimens required of the services to prepare their forces to meet his unique theater needs, and then may adjust the equipage of those units, again to meet his needs, and the services must comply, one must ask why are the services so much different in the way they describe themselves in the "force for" documents?

Further to this point, why will one service offer capabilities down to and including only a single person and yet other services define a capability type and then tailor it to include all of its organic enablers as the minimum deployable package, thereby preventing its enablers from use outside of the entire package? The opportunity for efficiencies could be enormous if the services were made to become much more standard in the way they construct their tables of allowance and table of equipage.

14. The Reserve Components: The value of National Guard and Reserve forces are critical if we are to craft a defense strategy that yields the nation strategic agility. As we seek to balance capability, capacity, and readiness, the reserve components' ability to surge in an affordable fashion makes them incredibly important assets. They need to be at the center of options for managing the military in a time of austerity. It is important to recognize that Guard and Reserve forces are not just a force in reserve, or a force multiplier with a personnel cost savings. When the reserve forces are used, they bring the rest of the nation into the decision making process.

15. Sequestration: Because there is little public awareness of what is happening relative to the reduction in resources allocated to defense, the hollow force that sequestration is imposing today will not be readily apparent until those forces are required. What is so devastating about sequestration, and not easily distilled to a sound bite, is that it is now affecting US capability to provide rapid response sufficient to meet the demands of our security strategy.

We have a growing strategy-resource mismatch, and the gap between what we say, what we want to accomplish, and what we can actually accomplish is growing. Without action to eliminate sequestration that mismatch will only get worse. It is vitally important to remember that the first responsibility of the United States government is the security of the American people. As the preamble of our Constitution states, the federal government was established to first "provide for the common defense" and subsequently "promote the general welfare." Recent decisions have confused this prioritization, with sequestration taxing defense spending at a rate greater than twice its percentage of the total federal budget. It's time to return to first principles, and get our priorities straight.

Conclusion

The challenge before us is to transform today to dominate an operational environment that has yet to evolve, and to counter adversaries who have yet to materialize. The 9/11 Commission report's now famous summary that the cause of the disaster was a "failure of imagination" cannot be repeated across our security establishment.

Another roles and missions commission will not be easy, and is sure to upset many apple carts, but if we do not carry out the task, our adversaries will capitalize on the ponderous, bloated, and inefficient structures, processes, and procedures that are currently in place, and remain based on the conditions that existed immediately after WWII. We have too much at risk to let that happen again. Put simply, the Islamic State does not have a JCIDS process.

I finish with a plea for new thinking. In the face of disruptive innovation and cultural change, the military can maintain the status quo, or it can embrace and exploit change. I suggest that the latter is preferred. Our services need to learn better

how to rapidly adapt new technology to the innovative concepts of operation that technology enables. Our intelligence community, military, and other security institutions will suffer if their internal organizations fail to adapt to new, disruptive innovations and concepts of operation.

One of our most significant challenges is the structural and cultural barriers, which inhibit the diffusion of new ideas challenging the status quo. That is the challenge for not just our military, but for all the other pillars of our national security architecture. We must challenge our institutions to have an appetite for innovation—and a culture that rewards innovative solutions.

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