



Airman in immersive virtual training environment calls for close air support

Air and Space Power Going Forward

By DAVID A. DEPTULA

Airpower was brought forth from its infancy by forward thinkers who envisioned roles for it that previously had not existed. Today, conversely, prospective roles for air and space power seem if anything to be limited by our ability to conceive of them, so vast are the capabilities yet to be harnessed.

—Lt Col Suzanne Buono, USAF

As we work to optimize security investment for the future, the Department of Defense (DOD) should adopt an approach that rewards the Services for developing innovative methods to attain national security objectives with the least risk and lowest cost in both blood and treasure. To accomplish this, DOD might have to revisit its tendency to provide each Service with relatively equal slices of the military budget. Under such an approach, the Services are motivated to make incremental changes to the weapons and concepts of the last war and have little reason to take risks to increase productivity of man and machine alike. What is needed, particularly in these times of increasingly complex national security challenges, rising costs, and shrinking budgets, is a plan for going forward that is centered on a shared vision of the variety of threat conditions we are likely to face, an honest evaluation of their significance, and a mature appraisal of what will be required to deal with them.

This is not to suggest that we devote ourselves to anticipating the detailed specifics of every future threat in order to develop the best means to specifically counter each. Rather, we should dedicate ourselves to



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crafting an overall defense strategy that will allow us to shape the environment and act flexibly across the range of operations and that will provide a framework on which to base our jointly focused resource and investment decisions.¹

Basing Future Direction on the Direction of the Future

Garnering unanimity from the four Services on what the future security environment will look like presents no small challenge, but it must not delay developing and fielding vitally needed capabilities. A reasonably common view of what the future is likely to hold can help us chart a proactive national security course. One approach is to draw out some of today's more incontrovertible trends and realities as a means to identify broad areas of agreement on which a rational defense strategy can be based.

There can be no denying that the geostrategic landscape of today is significantly different from the Cold War bipolarity it supplanted. Accordingly, future defense strategy must take into account the increasing prevalence of nonstate and transnational actors, insurgencies, emerging peer competitors, declining states, regional powers with nuclear weapons and the potential for proliferation, and a dynamic web of terrorism.

Likewise, the pace and tenor of our lives have been irrevocably altered by the accelerated pace of change. The advent of global trade, travel, and telecommunications has produced dramatic shifts in the way we live. Speed and complexity, once in opposition, have now merged and permeate all our endeavors from business to war. In yesterday's world, we could afford the luxury of prolonged buildups and deployments stretching over many months. In tomorrow's world, we will need to act in hours or days to preclude an opponent from achieving a *fait accompli*, change the opponent's decision calculus, and enhance deterrent effects. The profound impacts of globalization and the information revolution are mirrored, if not magnified, in the realm of conflict, where they have recast the character of our adversaries, redefined the fabric and scope of the operating environment, and reinvented the tools and techniques used to

conduct warfare. The future will hold more of the same. The inherent contradiction notwithstanding, rapid and radical change will continue to be a reliable constant.

We will have to contend with increasing military costs and decreasing military budgets. These realities, perhaps more than the rest, necessitate immediate consideration of a revised defense strategy and associated force structure. We simply do not have the resources to move down multiple, divergent paths in an attempt to meet our nation's future security requirements. Nor can we afford to spend more money and time on concepts and weapons that hold little or no prospect of increasing our probability for

ing from ongoing operations in Iraq and Afghanistan. Invariably, anti-American backlash plays out on the world stage any time the Armed Forces are involved in the affairs of a sovereign state, no matter how justifiably.² Moreover, large deployments of U.S. forces may create destabilizing effects within the very state or region they are intended to secure (for example in Iraq and to a lesser extent Afghanistan).³ Such second- and third-order effects, visible even among our allies, increasingly result any time the United States exercises power unilaterally. Such trends are not likely to subside, particularly given the growing transparency of the information age.

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combat success while lowering associated cost and risk. Furthermore, we must prepare to counter—or, better yet, dissuade—enemies yet to emerge in environments yet to materialize. Accordingly, the provision of flexibility of action across a wide spectrum of circumstances should be foremost among the decision criteria we apply.

Another trend is that the deployment of large numbers of U.S. forces on foreign soil is increasingly at odds with securing America's goals and objectives. Consider the array of domestic repercussions result-

Force structure options that project power without projecting mass with all its related challenges and vulnerability should be considered.

There is also the likelihood that force deployments will increasingly confront antiaccess challenges and strategies. Few states can contest U.S. military power in force-on-force combat; fewer still will try. Rather, the means by which adversaries will attempt to counter our strengths are likely to take the form of efforts designed to counter our presence.



U.S. Air Force (Charlie Spaulding)

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Secretary of the Air Force Michael Wynne tours Global Cyberspace Integration Center Hot Bench

Some Prescriptions

Our future defense strategy, and by extension the force structure it necessitates, must be driven by the requirements set forth in our National Security Strategy. The broad trends identified above provide a starting point for considering the types of circumstances that our defense strategy must be designed to address. The following are suggested measures geared toward keeping the United States in front of these extant trends.

Include All Pillars of National Security.

One of the first efforts—albeit an indirect

one—toward drafting a viable defense strategy should be to strengthen the nonmilitary elements of our security architecture. Bolstering and better integrating our diplomatic, informational, military, and economic instruments of national power is a must as we move into the future. Our defense strategy must be embedded in a multifaceted approach to international engagement and alliance-building, with the goal of achieving international stability, a condition directly related to our national defense. The decision to use offensive military

force should come as a last resort and should not be made in a vacuum.

Embrace Interdependence—The Next Level of Jointness. Crafting our nation's future defense strategy requires first codifying and solidifying the nature of the joint force framework in which our Services operate. The extent to which we leverage or move away from jointness—and by extension the synergies it creates—will have cascading effects on how we arm the Services and on which roles and functions each will be expected to execute. In particular, we must make interdependence the centerpiece of the Nation's defense strategy and DOD's force planning construct to maximize the capabilities we can bring to bear within the constraints under which we must operate.

Full appreciation for the importance of embracing an interdependent approach requires an understanding of the joint force construct that America uses to fight and the resultant synergies promised by its diligent application. In short, we do not fight wars as individual Services. Rather, each of the Services should offer a unique array of capabilities to a joint force commander who then draws from this "menu" of capabilities to apply the right force, at the right place, at the right time for a particular contingency. Joint operations entail—and require—much more than simply deploying separate Service components to a fight and aligning them under a single commander.

The greatest value of joint employment results less from bringing separate Service components together during an operation than from having deconflicted their strengths and specialties well in advance. This gets at the heart of why joint force operations create synergies: embracing an interdependent approach allows each Service to focus on its own core competencies while relying on the others to do the same. The opportunity costs of not embracing this approach include mission overlap and confused responsibility areas, redundant capabilities, lost opportunities for specialization, and the associated costs. This underscores why America cannot afford anything but the most dogged pursuit of interdependence as its frontline defense against resource limitations and growing threats.

Advocacy for interdependence among the Services would seem noncontroversial, particularly in light of the obvious advantages. However, it has been next to impossible to get Services to relinquish mission areas

Artist rendering of X-47B carrier-capable, multimission, unmanned combat air vehicle



Northrop Grumman

they have claimed even when those areas clearly belong with another. This situation is the product of attempts to attain self-sufficiency, the antithesis of jointness but nonetheless the desire of some unit commanders. Therefore, one of our biggest priorities going forward must be to wrestle the intricacies of jointness to the ground and to mandate Service adherence to clearly defined and delineated capability sets.

We must also recognize that the days of sustained real defense budget growth, which for many years facilitated the ability to ensure

the time and resource expenditure required to find our enemies now eclipses anything required to deal with them

equitable Service budget shares, are long gone. DOD and national leadership, including Congress, must understand the exigencies of fully committing to the tenets of joint force operations, and their leadership in enforcing those tenets will be necessary to ensuring its success. To be sure, we have made solid strides toward jointness since the days of the failed Iranian hostage rescue owing in large measure to the 1986 Goldwater-Nichols Act, yet some of the most critical ground remains to be covered. The military has yet to internalize the requirement to elevate the interests of jointness above those of individual Service budgets. DOD can alleviate costly overlaps and excessive redundancies once the Services are given, and adhere to, clear and distinct lanes in the road, and once the leadership takes an active role in enforcing the traffic rules. That is the price of admission if DOD is serious about optimizing force structure for the future.

Invest for Mission Flexibility. Increasing our flexibility of forces offers another means of preparing for a wide range of missions despite budgetary constraints that preclude large force buildups. Mission flexibility is a function of how we size the Services, balance forces, and select equipment. It also derives from creatively teaming multidomain forces and capabilities to achieve powerful effects while minimizing the number of forces employed.

Likewise, employing our forces to train and assist indigenous forces in defending their own countries would be another

prudent and highly effective use of resources. This approach makes optimal use of local language and culture familiarity, which is always a challenge to U.S. forces. Devising such highly capable combinations, specifically tailored to dominate the circumstances they will be operating in, should be a mainstay of our strategy and employment repertoire. The more versatility we can build into our force structure, the greater will be the range of operations in which the U.S. military can be effectively employed.

Selecting and arraying forces for flexibility of response is the best means of girding against the twin evils of complex adversaries and the reduced resources to counter them. Add to that what will undoubtedly continue to be a sizeable role for the military in the provision of disaster relief and humanitarian aid around the world, and the rationale for ensuring that forces will be capable of carrying out full-spectrum operations is clear. Lacking the virtually infinite resource base required to arm for every possible contingency, posturing for flexibility will provide the best means and best odds for meeting the demands of “big world, not so big budget.”

Measure Merit Based on Value. Force structure can be further optimized if DOD changes the way it measures and evaluates the potential return on investment from concepts of operation and systems. As a result of increases in per-unit capability—largely owing to advances in technology—the notion of unit cost as a measure of merit no longer makes much sense; the optimal measure is what kind of effects can be achieved per dollar spent (that is, value). For example, a stealthy, long-range aircraft with the number of weapons it would take hundreds of other aircraft to deliver becomes one of the most valuable platforms in our inventory, even with a unit cost higher than any of the other aircraft. Our expenditures must be geared toward those concepts and systems of greatest value that underwrite the appropriate force structure to realize the national security strategy. DOD’s planning, programming, budgeting, and execution system should be adjusted accordingly.

Assure Access. To counter the increasingly advanced antiaccess strategies that our adversaries are likely to employ, we should be actively pursuing and investing in options that negate these strategies. It is perhaps in this regard that air, space, and cyber forces yield some of their greatest benefits and

strengths. They allow us to deliver a wide variety of effects in forward areas around the world, doing so largely from locations that are well beyond adversary reach.

Future forces increasingly must be able to operate on short notice from normal peacetime bases over long distances. The compression of time and the inability to station forces everywhere they are needed mean we must move toward creating forces able to engage rapidly from a peacetime posture. Additionally, once forces are within engagement range, the tactical antiaccess threats posed by the proliferation of modern technology will have to be dealt with to create a permissive environment for friendly force operations. Continued investment in stealth, speed, standoff, and other technologies for aerospace vehicles—manned or unmanned—and increased numbers and coverage of space-based systems are required if we are to stay ahead of the antiaccess systems our adversaries are seeking to field.

Balance Sensors and Shooters. Similarly, adversaries have worked to thwart our asymmetric advantages with asymmetries of their own. They target civilians, hide in population centers, and do not wear uniforms. They have assiduously worked to deny us the ability to “find” and “fix” them, fully aware that there can be no “finish” piece of that equation until the first two are satisfied. To counter these efforts, we must acknowledge that our intelligence, surveillance, and reconnaissance (ISR) capabilities will be required as a heavy lifter in future strategy and need integration into all elements of our forces. The time and resource expenditure required to find our enemies now eclipses anything required to deal with them.

Unfortunately, ISR capabilities have labored under the mantle of “low density, high demand” for some time, and our reliance on ISR will only grow. Therefore, one of the main challenges in planning the future force structure is to address the balance in investment between sensors and shooters. Our problem is no longer how to engage a set of targets to achieve a particular set of effects, but rather to determine where the appropriate targets are, and what kinds of actions are required to achieve the desired effects. The funding percentages allocated among find, fix, and finish may need to be brought closer to the proportions in which these mission types require resources.

A complementary approach is to examine the sensor-to-shooter balance, not in terms of dollars, but in terms of concepts of operation. With today's technology, we can accomplish this rebalance in a fashion that does not reduce our force application capacity or require dramatic budget shifts. The potential exists to do that by ensuring that every platform's inherent ability to contribute to our distributed sensor architecture is optimized. Consider the F-22 and F-35. Both are flying sensors that allow us to conduct ISR operations inside adversary battlespace any time, in addition to making use of their vast array of attack capabilities. Moreover, the fact that they are not opposed by equally capable adversary aircraft means that we can make use of those robust capabilities all the more. Similarly, almost every force application aircraft flying in Southwest Asia today has a targeting pod just as usable for ISR as for weapons employment. Such capabilities have become known as "nontraditional ISR." By taking advantage of such features on platforms we already have, we can increase sensor capacity before a single investment dollar is moved between program elements. We need

only build the concepts of operation that will take us from viewing such capacity as nontraditional ISR to conceiving of and employing it as routine ISR.

Structuring for the Future

Two enduring elements of our National Security Strategy, regardless of administration, are that America will engage forward in peacetime and fight forward in wartime. Accordingly, to execute our National Security Strategy, the Air Force requires sufficient force structure to maintain a rotational base capable of accomplishing these dual mandates. The mechanism for doing so is the Air and Space Expeditionary Force (AEF) construct. AEFs provide joint force commanders with ready and complete air and space forces to execute plans.

Ten AEFs provide the framework to achieve sufficient expeditionary aerospace forces to sustain rotational base requirements and personnel tempos to meet the dual requirements of our security strategy. The key to Air Force expeditionary force structure is to ensure that those 10 AEFs are each struc-

ture, equipped, and equal in capability and capacity for each of the Air Force's mission areas: aerospace superiority, global attack, rapid global mobility, precision engagement, cyber superiority, and agile combat support. Aerospace capability does not stop with expeditionary assets. Space, ISR, cyber, national missile defense architecture, intertheater airlift, and others provide the foundation upon which the AEF structure stands. What the Air Force will require in the future is sufficient force structure to maintain both an adequate rotational base of expeditionary capabilities and its foundation.

the average age of Navy ships and Army vehicles—will grow. The impact of this aging is becoming dramatic. "It was a looming crisis, and now, because of Iraq and Afghanistan, it's a looming disaster," notes Richard Aboulafia, an analyst with the Teal Group.⁴ That was written before the entire Air Force F-15 fleet was grounded in early November 2007 due to an F-15 falling apart in mid-air from structural failure. Today, nearly 800 aircraft—14 percent of the Air Force fleet—are grounded or operating under restricted flying conditions. As defense analyst Loren Thompson notes:

after 20 years of neglect by both political parties, a period of consequences has arrived for American air power. We either spend more [on recapitalization of the Air Force], or in the very near future we lose our most important war-fighting advantage. The Air Force that prevented any American soldier from being killed by enemy aircraft for half a century may not be up to the task in the years ahead due to lack of adequate investment.⁵

Retired Army General Barry McCaffrey warns that the Air Force is

badly under-funded, its manpower is being drastically cut and diverted to support counter-insurgency operations, its modernization program of paradigm shifting technology is anemic, and its aging strike, lift, and tanker fleets are being ground down by non-stop global operations with an inadequate air fleet and maintenance capabilities.

His vision of the future includes creating

a U.S. national security policy based principally on the deterrence capabilities of a dominant, global Air Force and Naval presence which can: guarantee the defense of the continental United States; provide high levels of assurance for the security of our key allies from air, missile, space, cyber, or sea attack; and which can guarantee a devastating punitive air, sea, and cyber strike using conventional weapons capable of devastating the offensive power of a foreign state—and which can hold at risk their vital national leadership and economic targets.⁶

It is imperative that the Air Force modernize and replace its aging air- and spacecraft

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Enemies and potential adversaries have not stood idly by as the Air Force has become a geriatric force, with bombers older than their pilots, 30-year-old fighters, and tankers over 45 years of age. With current program plans, the average age of Air Force aircraft, 24 years—much older than



22: Marine Expeditionary Unit (Peter R. Miller)

Bangladeshi disaster relief planner addresses U.S. and Bangladeshi military members and government delegates

to ensure America's freedom to maneuver, operate, and command and control the full array of joint forces in the face of emerging and proliferating highly sophisticated threats.

A future defense strategy based on the trends identified earlier points to the following capability demands on the Air Force:

- impose paralysis at strategic, operational, and tactical levels of adversary capacity
- rapidly dominate (within days) adversary air defenses to allow freedom to maneuver, freedom to attack, and freedom from attack
- render an adversary's cruise and ballistic missiles ineffective
- rapidly reconstitute any loss to friendly space capability and negate adversary space capability
- create desired effects within hours of tasking, anywhere on the globe
- provide deterrence against attack by weapons of mass destruction and coercion by maintaining a credible nuclear and flexible conventional strike capability
- create precise effects rapidly, with the ability to retarget quickly, against large, mobile, hidden, or underground target sets anywhere, anytime, in a persistent manner
- assess, plan, and direct aerospace operations anywhere in near real time, tailored across the spectrum of operations and levels of command
- provide continuous, tailored information within minutes of tasking with sufficient accuracy to engage any target in any battlespace worldwide
- ensure use of the cyber domain unhindered by all attempts to deny, disrupt, destroy, or corrupt it, and ensure the ability to manipulate an adversary's information in pursuit of friendly objectives
- provide airlift, aerial refueling, and en-route infrastructure capability to respond within hours of tasking
- build an aerospace force that can conduct robust, distributed military operations, fully sustained over finite periods with secure reachback
- build a professional cadre to lead expeditionary aerospace and joint forces
- implement innovative concepts to ensure recruitment and retention of the right people to operate the future air, space, and cyber force and achieve an unrivaled degree of innovation founded on integration

and testing of new concepts, innovations, technologies, and experimentation.

Finally, our defense establishment will need to address some difficult questions: How do we deal with the fragility of our space architecture? Does DOD need to seek legislation to unshackle the constraints that force us to operate outside an adversary's observe-orient-decide-act loop and that hamper our ability to lead in the invisible but ongoing cyberwar? How does the Nation move from a security architecture designed in the aftermath of World War II to one more relevant for the 21st-century security environment? What needs to be done regarding our ability to counter "unrestricted warfare?"⁷

Just as combat tomorrow will look different than it did yesterday and does today, so too should the military that we prosecute it with. We should take maximum advantage of the asymmetric capabilities America possesses with its air, space, and cyber forces. A concerted focus on further developing and expanding these forces would serve the Nation well, as they are uniquely positioned to underpin the kind of defense strategy and force structure appropriate to America's future.

Capabilities employed through air, space, and cyberspace allow the United States to project precision effects over great distances, with asymmetries and speed not available in any other domains. They allow America's military to project power while minimizing vulnerability, decreasing the requirement to put surface forces at risk. Adversaries have a limited opportunity to contest our presence when we are delivering effects from outside their reach, often operating outside their awareness. That also results in imposing a degree of psychological advantage not available any other way.

Additionally, the nature of America's air, space, and cyber systems is such that they can be directed, redirected, prepositioned, repositioned, and even recalled. They offer virtually limitless targeting possibilities both in terms of the effects levied and the recipients they can be levied upon. Air, space, and cyber systems deliver the kind of flexibility in which America should be making substantial investment—both in terms of planning and of system acquisition—as they provide options that will be key to the Nation's future security.

To be sure, the U.S. military must retain and enhance the core competencies of all four Services; however, these core competencies must be well defined. This should be on top of the Nation's security in-box for the next Quadrennial Defense Review, if not sooner. The Services all stand to gain if their collective efforts result in the creation of a well-informed, rationalized defense strategy for the future that can then guide the corresponding resource investment. **JFQ**

NOTES

¹ In "A New Division of Labor: Meeting America's Security Challenges beyond Iraq" (Santa Monica, CA: RAND, 2007), Andrew R. Hoehn et al. suggest a number of changes in our DOD architecture based on the emerging security environment. Their recommendations focus on "relocating risk to produce needed capabilities" and deserve serious attention by defense and national leadership as they establish an appropriate strategy blueprint for the likely security future.

² Even during the well-documented atrocities the Serbian military perpetrated against Albanians in Kosovo in 1998, China and Russia opposed U.S.-led action taken under the auspices of the United Nations; military action to halt the destruction had to be conducted instead under the flag of the North Atlantic Treaty Organization.

³ Of note, U.S. deployments are not the only catalyst for such destabilizing effects; negative effects have been evident for years when "great powers" have sent forces into smaller sovereign states.

⁴ Dave Montgomery, "An Aging Fleet has Air Force Worried," *Seattle Times*, March 4, 2007.

⁵ Loren Thompson, "The Slow Death of American Airpower," Lexington Institute Issue Brief, January 16, 2007.

⁶ Barry R. McCaffrey, Memorandum for U.S. Military Academy, October 15, 2007.

⁷ *Unrestricted Warfare* is a book on military strategy written in 1999 by two Chinese air force colonels. It addresses how a nation such as China can defeat a technologically superior opponent through means other than military confrontation, such as using international law and a variety of economic and unconventional measures to present the opponent with unanticipated dilemmas, obviating the need for military action. See Qiao Liang and Wang Xiangsui, *Unrestricted Warfare* (Los Angeles: Pan American Publishing Company, 2002).