

A E R I A L PARTNERS IN ARMS



By BENJAMIN S. LAMBETH

F-35B Joint Strike Fighter,
STOVL Variant

One of the most remarkable aspects of American joint force capability is the close harmony that has steadily evolved since Operation *Desert Storm* in the integrated conduct of aerial strike operations by the U.S. Air Force and Navy, along with the latter's closely associated Marine Corps air assets. This underrecognized aspect of the Nation's warfighting posture stands in marked contrast to the more familiar and contentious relationship between the two Services in the roles and resources arena, where a fundamentally different incentive structure has tended to prevail and where seemingly zero-sum battles for limited defense dollars have appeared as the natural order of things from one budget cycle to the next. As a former Air Force three-star general and fighter pilot recently remarked on this key point, although there remains "lots to be done at the budget table, tactically the [two] Services are [now] bonded at the hip."¹

Indeed, in the words of a one-time Navy Fighter Weapons School instructor and now the commander of Second Fleet, such integration "is now a part of the culture" of U.S. fixed-wing combat aircrews, regardless of

whether the wings worn on their uniforms are silver or gold.² In strong testimony to this fact, one today might easily encounter an Air Force F-15 or F-16 pilot, a Navy F/A-18 pilot, and a Marine Corps AV-8B pilot in an animated three-way conversation about strike force employment tactics at Nellis Air Force Base, Nevada; Naval Air Station Fallon, Nevada; or Marine Corps Air Station Yuma, Arizona; and be unable to tell which pilot was from what Service without looking at the nametags and unit patches on their flight suits.

Early Apartness

This integration of the Navy and Air Force in aerial strike warfare is a fairly recent development. For more than two centuries, the Navy was proudly accustomed to operating independently on the high seas, with a consequent need to be completely self-reliant and adaptable to rapidly changing circumstances far from the Nation's shores and with the fewest possible constraints on its freedom of action. The Nation's sea Service was forward-deployed from the beginning of its existence and, throughout most of the Cold War, was the only Service "out there" in and above the maritime commons and ready

for action. Largely for that reason, operations integration between the Navy and Air Force even as recently as Vietnam was not a remote planning consideration. On the contrary, the main focus was on force *deconfliction* between the two Services. Not surprisingly, a unique Navy operating culture emerged from this reality that set the Navy clearly apart from the Air Force's more rule-governed way of conducting its missions.

For its part, the Air Force was looking at a very different operating arena in which friendly and enemy aircraft would be simultaneously airborne and often commingled in the same block of airspace. Unlike the Navy, which was focused on the open-ocean environment, on the North Atlantic Treaty Organization's (NATO's) northern flank and the defense of northern Norway, and on Murmansk and the Kola Peninsula of the Soviet Union, the Air Force was preparing for joint operations in shared battlespace with the Army and with U.S. NATO allies in Central Europe. Given that dissimilarity in mission orientation, the Navy and Air Force, in a fair characterization, "simply thought about and operated within two separate conceptual worlds."³

As a result, a pronounced culture divide came to separate the Air Force and naval aviation in the strike warfare arena. In telling testimony to this divide, Air Force pilots who participated in joint peacetime exercises with their Navy counterparts during the early post-Vietnam years often told horror stories about such seemingly cavalier (to them) Navy practices as last-minute unannounced changes in flight schedules, controlling agencies, radio frequencies, operating areas, and even mission profiles.

By the same token, Navy pilots who flew in similar joint exercises routinely complained that the Air Force's allegedly overly rigid adherence to maintenance, operations, and crew rest requirements greatly hampered its ability to be fully flexible in executing missions. One junior naval aviator in 1991 voiced a common refrain in this respect that neatly encapsulated the essence of the cultural divide from the Navy's perspective: "Naval aviators are fond of saying that Air Force pilots may only do something if it is written somewhere that they can, while Navy pilots may do whatever they want as long as it isn't written somewhere that they can't."²⁴

Adjustments to New Demands

Iraq's invasion of Kuwait in August 1990 presented naval aviation with a new and unfamiliar set of challenges. During the course of the 6-week Persian Gulf War that began 5 1/2 months later, the Navy's carrier air wings found themselves obliged to surmount a multitude of adjustment needs that only came to light for the first time in that campaign. With respect to equipment, for example, the naval air capabilities that had been fielded and fine-tuned for open-ocean engagements, such as the long-range AIM-54 Phoenix air-to-air missile carried by the F-14, were of little relevance to the coalition's predominantly overland air combat needs in *Desert Storm*.

In addition, because of the Navy's lack of a compatible command and control system that would enable receipt of the document electronically, the daily air tasking order (ATO) generated by the Air Force-dominated combined air operations center (CAOC) in

Saudi Arabia had to be placed aboard two S-3 aircraft in hardcopy each day and flown to the six participating carriers so that the next day's air wing flight schedules could be written.

As for the Navy's other equipment items and habit patterns developed for open-ocean engagements, all were, in the words of the former Vice Chairman of the Joint Chiefs of Staff, Admiral William Owens, "either ruled out by the context of the battle or were ineffective in the confined littoral arena and the environmental complexities of the sea-land interface."²⁵

Viewed in hindsight, one cannot overstate the shock effect that *Desert Storm* had on the Navy. As one rising naval aviator noted in 1992, "Nearly two decades of narrow focus—on one-shot, small-scale, and largely single-Service contingency operations—[had] left naval aviation temperamentally, technically, and doctrinally unprepared for some key elements of a joint air campaign such as *Desert Storm*."²⁶

Fortunately, the Navy quickly made the necessary adjustments in the early aftermath of the campaign. In the realm of equipment, it stepped out smartly to upgrade its precision strike capability by fielding both new systems and improvements to existing platforms that soon gave it a degree of flexibility that it had lacked throughout the Gulf War. First and foremost, it moved to convert the F-14 from a single-mission air-to-air platform into a true multimission aircraft through the incorporation of the Air Force-developed LANTIRN (low-altitude navigation and targeting infrared for night) system that allowed the aircraft to deliver laser-guided bombs both day and night.

The Navy also rectified its shortfall in precision-guided munitions delivery capability by equipping more F/A-18s with the ability to fire the AGM-84E standoff land-attack missile and to self-designate targets. To correct yet another equipment-related deficiency, naval aviation undertook measures to improve its command, control, and communications arrangements so that it could operate more freely with other joint air assets within the framework of an ATO. Those measures most notably included gaining the long-needed ability to receive the daily ATO aboard ship electronically.

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Finally, in the realm of doctrine, there was an emergent Navy acceptance of the value of strategic air campaigns and the idea that naval air forces must become more influential players in them. As Admiral Owens noted as early as 1995, "the issue facing the Nation's naval forces is not whether strategic bombardment theory is absolutely correct; it is how best to contribute to successful strategic bombardment campaigns."²⁷

To be sure, despite these salutary trends, a number of disconnects persisted between the Navy and Air Force throughout the 1990s. One recurring manifestation of the cultural divide that still separated the two Services

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U.S. Air Force (Derrick C. Goode)

Coalition troops track mission in combined air operations center

came in the form of continued Navy discomfiture over the Air Force–inspired ATO and the way in which, at least in the view of many naval aviators, it sometimes made less than the best use of the Nation’s increasingly capable carrier-based strike forces.

Many of those Navy complaints, it must be noted, merely reflected an incomplete understanding of the air tasking process and the manifold constraints that governed it. In fact, most of these complaints would have been voiced under just about any alternative planning arrangements as well. Often overlooked was the fact that NATO operations over the former Yugoslavia were, for good reason, politically micromanaged exercises in force employment in which it was impossible for CAOC planners to make optimal use of *any* air assets, Navy or any other. In those cases, the ATO often provided a convenient lightning rod for Navy complaints that were actually prompted by the severe operating limitations imposed by U.S. political leaders in the interest of avoiding fratricide, collateral damage, noncombatant civilian casualties, and other violations of standing rules of engagement, with the intent both to reassure reluctant NATO allies and to prevent tactical mistakes from producing undesirable strategic consequences.

Despite these lingering disconnects, the single most influential factor in bringing the two Services together in aerial strike warfare

was the need for Air Force and Navy strike warfare assets ultimately operating virtually interchangeably in the daily ATO.

Convergence over Afghanistan and Iraq

The terrorist attacks of September 11, 2001, levied upon the Nation a demand for a deep-strike capability in the remotest part of Southwest Asia where the United States maintained virtually no access to forward land bases. That unusual demand required the Navy’s carrier force to provide the bulk of strike-fighter participation in the joint air war over Afghanistan that ensued soon thereafter. To be sure, Air Force heavy bombers also played a prominent part in that air-centric campaign, codenamed Operation *Enduring Freedom*. Nevertheless, carrier-based aviation operating from stations in the North Arabian Sea substituted almost entirely for what would have been a far larger complement of land-based strike fighters in other circumstances because of an absence of suitable forward operating locations close enough to the war zone to make the large-scale use of the latter practicable.

Much energy was wasted soon after the war in parochial fencing between some Air Force and Navy partisans over which Service deserved credit for having done the heavier lifting in *Enduring Freedom*, with Air Force advocates pointing to the preponderance of overall bomb tonnage dropped by the Air Force, and Navy proponents countering that it was carrier-based aircraft that flew the overwhelming majority of combat sorties and that performed nearly all of the “true” precision laser-guided bomb attacks. That contretemps was totally unhelpful to a proper understanding of what integrated Air Force and Navy operations actually did to produce such a quick and lopsided win over the Taliban and al Qaeda.

True enough, Air Force fighters operating out of shore bases in the Persian Gulf flew only a small percentage of the overall number of strike missions conducted in *Enduring Freedom*. Yet Air Force heavy bombers, with few exceptions, dropped nothing but satellite-aided precision munitions of various types, and Air Force B-52s dropped large numbers of accurate Joint Direct Attack Munitions in addition to unguided 500-pound general-purpose bombs. It accordingly is a toss-up as to which Service predominated in the precision-strike arena. Arguing over whether Navy or Air Force airpower was more important in achieving the successful outcome of *Enduring Freedom* was about on a par with arguing

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during the 1990s was the Nation’s 10-year experience of Operations *Northern* and *Southern Watch*, in which both Air Force land-based fighters and Navy carrier-based fighters jointly enforced the no-fly zones over northern and southern Iraq, first put into effect by the United Nations shortly after the conclusion of *Desert Storm*. That prolonged aerial policing function proved to be a real-world operations laboratory for the two Services, and it ended up being the main crucible in which their integration in strike warfare was forged over time. By conscious choice, both Services sent their best tacticians and intelli-



F-35C Joint Strike Fighter, Carrier Variant

Lockheed Martin

over which blade in a pair of scissors is more important in cutting the paper.

If the air war over Afghanistan was tailor-made for integrated Air Force and Navy operations, the subsequent 3-week campaign a year later to topple Saddam Hussein would prove to be no less so. For example, as during Operations *Allied Force* and *Enduring Freedom*, the availability of Navy EA-6B jamming support was an absolute go/no-go criterion for all *Iraqi Freedom* strike missions, including those that involved stealthy Air Force B-2s and F-117s.

Operation *Iraqi Freedom* also set a new record for close Navy involvement in the high-level conduct of joint air operations. As the deputy combined force air component commander (CFACC), then-Rear Admiral David Nichols was not only the “senior naval representative” in the CAOC but also the alter ego, for all intents and purposes, to the Air

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Force CFACC, then-Lieutenant General T. Michael Moseley, when it came to commanding and managing the air war. That representation and more by senior naval aviators and intelligence officers stood in stark contrast to the Navy’s less gratifying experience 12 years before during *Desert Storm*, when Navy staffers in the CAOC were both too few in number and too junior in rank to have significant influence on day-to-day decisionmaking.

Emergent Trends

The performance of Air Force and Navy strike assets in the first two American wars of the 21st century bore ample witness to the giant strides that have been made in the integration of the Services’ air warfare repertoires since *Desert Storm*. The two wars saw naval aviation fully integrated into the joint and combined air operations that largely enabled the successful outcomes in each case. They also showed increased Air Force and Navy acceptance of effects-based thinking and planning, as well as a common use of the joint mission planning tools that the Air Force had gradually refined after *Desert Storm*.

As attested by the Navy’s experience in both *Enduring Freedom* and *Iraqi Freedom*, the CAOC-generated ATO is now disseminated electronically to carrier strike groups in an easily usable form and is updated hourly via secure email. Moreover, prompted by

the experience of *Enduring Freedom* and *Iraqi Freedom*, prospective carrier air-wing commanders and other rising naval aviation leaders now routinely spend upward of 100 days forward-deployed in the new CAOC operated by U.S. Central Command Air Forces at Al Udeid Air Base in Qatar for operational planning familiarization in a senior CAOC staff assignment before assuming their new command responsibilities. They also routinely attend the Air Force’s strike planning course at Hurlburt Field, Florida, and, after having moved on to postcommand billets, its week-long CFACC course at Maxwell Air Force Base, Alabama.

As for other progress toward greater cross-Service integration, there have been steady improvements in joint operational training between the Air Force and Navy since Vietnam. For years, naval aviators have routinely taken part in the Air Force’s recurrent Red Flag large-force employment training exercise that first began in late 1975 and that continues to be conducted roughly six times a year at Nellis Air Force Base. Also, the Air Force’s and Navy’s undergraduate pilot training programs are now fully integrated, with Air Force officers commanding Navy primary undergraduate pilot training squadrons and vice versa, and there has been recurrent cross-communication and cross-fertilization between the Air Force’s and Navy’s weapons schools in recent years to good effect.

The two Services continue as well to provide exchange officers to each other’s line squadrons and flight test units on a regular basis, with a Navy lieutenant commander recently assigned to fly the F-22A Raptor fifth-generation Air Force fighter with the 422^d Test and Evaluation Squadron at Nellis. In addition, Navy E-2C Hawkeye crew members regularly fly aboard the Air Force’s E-3 airborne warning and control system aircraft whenever there is an operational need for their presence at the console. Similarly, ever since the Air Force retired its EF-111 electronic warfare aircraft from service not long after *Desert Storm*, Air Force aircrews have routinely been assigned to full tours of duty as serving aircrew members with the Navy’s EA-6B shore-based expeditionary squadrons.

Perhaps most constructively of all, the two Services continue to bring their respective combat assets together in a variety of joint training and experimentation exercises aimed at further honing interoperability and

U.S. Air Force (Andy M. Kin)



SEALs hoisted into Air Force CV-22 during training mission

extracting the most from their synergistic potential. Most recently, such joint Air Force and Navy involvement occurred during Exercise Valiant Shield '06, a 5-day evolution conducted in the vicinity of Guam from June 19 to June 24, 2006, under the command of Admiral Gary Roughead, commander of U.S. Pacific Fleet, who served as joint force commander for the exercise, with Air Force Lieutenant General David Deptula, commander of Pacific Air Force's Kenney Warfighting Headquarters at Hickam Air Force Base, Hawaii, as his CFACC, and with Rear Admiral Mark Emerson, commander of the Naval Strike and Air Warfare Center at Fallon, assigned as deputy CFACC for the exercise.

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After the exercise ended with nearly 2,000 sorties having been flown by all participating aircraft, General Deptula characterized it as "an opportunity to interface large numbers of [American] air and sea forces together in a unique environment and to work out some of what we call frictions. . . . You find out things that might not go as you would have anticipated or planned. These types of exercises allow us to work out those challenges in advance." As to the unity of effort that was sought and achieved during the course of the joint force exercise, he added, "We're not interested in what Navy or Air Force airplanes are doing separately. We take the approach that air power is air power, and we're interested in ensuring [that] we take a unified stance in working those assets together with our sea-based assets in achieving the commander's overall objectives."⁸

A New Synergy

The unprecedented close integration of Air Force and Navy strike operations during the first two American wars of the 21st century confirmed the observation of a respected ship-design specialist when he wrote in 1998 that "carrier-based and land-based tactical aircraft, as well as the [continental United States]-based Air Force bomber force, are intertwined in their support of each other."⁹ To be sure, the two Services have long paid lip service to their mutually reinforcing potential

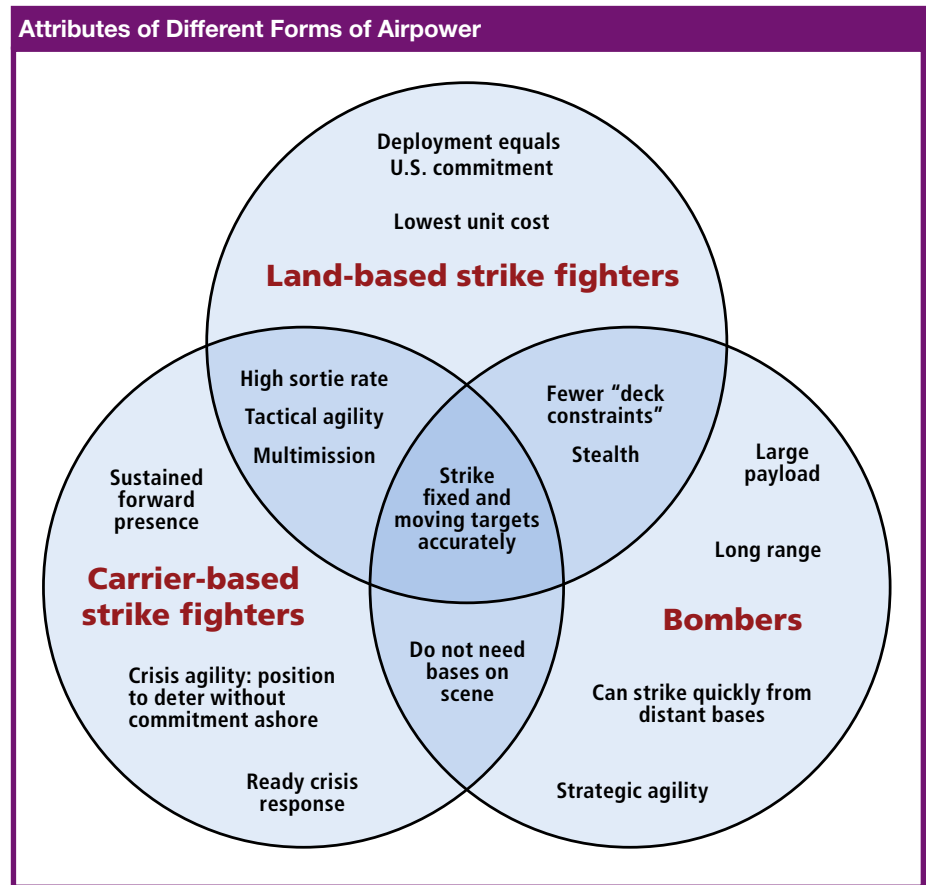
in their declarations. Yet in the increasingly competitive annual budget battles within the Pentagon, the strike-warfare components of the Air Force and Navy have all too often appeared as though they were mainly devoted to putting each other out of business.

The real world experience described above, however, suggests that when it comes to the crucial matter of integrated strike-warfare operations, the two Services are, and should duly regard one another as, natural allies rather than competitors in the roles and resources arena. Indeed, when viewed from an operational rather than a bureaucratic perspective, the Air Force's and Navy's longstanding involvement in air-delivered conventional force projection are complementary in the Service of joint force commanders, since land-based bombers and fighters and carrier-based fighters are not duplicative and redundant, but rather offer overlapping and mutually reinforcing as well as unique capabilities for conducting joint strike warfare. (The Venn diagram below captures this unique interrelationship.¹⁰)

One area in particular in which land- and sea-based airpower has a symbiotic

relationship that warrants further nurturing is nonorganic in-flight refueling. As was shown during Operations *Enduring Freedom* and *Iraqi Freedom*, the participating Navy carrier air wings plainly needed the support of long-range Air Force and allied tankers to generate mission-effective sorties on a sustained basis. Yet the tankers also needed the protective screening against potential enemy threats that was offered by Navy fighters in situations in which land-based fighters were unavailable in sufficient numbers due to the lack of adequate regional basing. For his part, especially in the case of Operation *Enduring Freedom* over remote Afghanistan, the air component commander needed *both* force elements in order for the air weapon to offer its greatest contribution to joint warfare—a fact that bore out the observation of one Air Force advocate almost a decade before that "there is a place on the team for *all* the nation's land, sea, air, and space forces," with the only real question being one of appropriate mix and affordability.¹¹

In both wars, to sum up, each Service brought a needed comparative advantage to the fight. In light of that, rather than continu-



Source: RAND PM-304/2-CRMAF. RAND MG655-10.1

ing to engage in pointless either/or arguments over carrier- versus land-based airpower that miss this overarching point, Air Force and Navy proponents should instead use their recent combat experience as a model for seeking ways, as one writer put it nearly a decade ago, to “enhance the synergy of the air power triad of long-range projection forces” consisting of bombers, land-based fighters, and sea-based fighters that, taken together, make up the Nation’s overall air power equation.¹² The former commander of Naval Air Force, U.S. Atlantic Fleet, Vice Admiral John Mazach, gave clear voice to this critically important point when he reflected after the Afghan air war:

Rather than pitting one variant of air power against the other . . . Enduring Freedom convincingly demonstrated that such 20th-century interservice rivalries have no place in the 21st-century U.S. warfighting establishment. The operation was remarkable for its degree of seamless interoperability between the U.S. Air Force and the Navy–Marine Corps team’s sea-based aviation. . . . In short, aircraft carriers and [land-based] bombers should not be viewed as competitors for resources, but as partners able to leverage unique synergies on the modern battlefield.¹³

Future Challenges

As for still unresolved issue areas where further work remains to be done, senior leaders in both Services have often cited continued communications shortcomings as one important problem area in need of further attention. Within that arena, bandwidth limitations remain, by all accounts, a major constraint on the implementation of many good-in-principle ideas in the realm of command and control integration that could bring the Services closer together as a joint warfighting team. One step toward a possible resolution, in the view of both Air Force and naval warfighters, would be a dynamic bandwidth management system that automatically prioritizes incoming messages.

Another persistent sore spot between the Air Force and Navy, at least from the latter’s perspective, has to do with a rapidly looming problem in the electronic attack mission area. When the Air Force decided to retire

its 24 aging EF–111 Raven electronic jammer aircraft not long after *Desert Storm*, primarily because of excessive upkeep costs, the Navy and Marine Corps picked up the tactical electronic attack mission with their now greatly overworked EA–6B Prowlers. As a result, those aircraft became low-density/high-demand national assets. That arrangement has, by and large, worked satisfactorily until now, but the EA–6Bs are rapidly running out of service life, the first replacement EA–18G Growlers will not enter fleet service until 2009 at the earliest, and the agreement that made the Navy the lead Service in the provision of standoff jamming after *Desert Storm* expires in 2011. Accordingly, senior naval aviation leaders insist that the Air Force will soon have to decide, conjointly with the Navy, what it intends to do by way of proceeding with timely gap-filler measures.

Still other possible joint ventures worth exploring in the training arena by the Air Force and Navy might include:

- more recurrent exercises between the two Services as instruments for spotlighting persistent friction points, to include greater Air Force involvement in Navy carrier air wing predeployment workups at Fallon and more Navy participation in Air Force Red Flag and other large-force training evolutions

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KC–135 refuels F/A–18C over Afghanistan, 2006





U.S. Air Force (Joshua Garcia)

Lt. Gen. Gary North, commander of U.S. Central Command Air Forces, discusses Joint Airborne Communications System on C-130

- greater joint reliance on distributed mission simulation, which will entail high buy-in costs but can offer substantial long-term payoffs as fuel and associated training costs continue to soar

- more holistic consideration of the joint use of training ranges, perhaps with a view toward ultimately evolving into a truly national range complex

- more comprehensive joint use of realistic adversary threats in training, not only in air but also in space and cyberspace operations

- extended integrated air warfare training to the surface and subsurface Navy

- enlistment of real-time involvement of air operations centers worldwide.

As for additional areas of possible closer Air Force and Navy cooperation that pertain more to investments in equipment and hardware capability, the two Services could usefully consider:

- continued pursuit of ways to bring their connectivity systems into closer horizontal integration

- greater attention to exploiting the promise of new electronic warfare means in joint warfare

- getting the greatest operational leverage for the least cost out of the high-commonality F-35 multirole combat aircraft that both Services will be acquiring in large numbers in the coming decade

- further coordination in setting agreed integration priorities.

Even with much room remaining for further progress, the overall record of Air Force and Navy accomplishment in integrated air warfare planning and conduct since *Desert Storm* has been a resounding good news story that is a credit to each Service. As such, it offers a role model for what can be done elsewhere, not just in the interface between air and maritime operations, but even more in the still troubled relationship between the Air Force and Army when it comes to the most efficient conduct of joint air-land warfare.

More encouraging yet, thanks to the commanding role played by individuals in both Services with the right focus and a determination to act on it, there is now a well-ensconced successor generation in place in both the Air Force and Navy who grew up as line aircrew members during the formative years of this integration process. These individuals have since migrated through such mid-level positions as CAOC night coordinators, combat plans and operations staffers, and strategy division principals to the more senior flag ranks and positions that will help them ensure that the strike warfare communities in both Services will continue to nurture an increasingly common operational culture. Such commonality of purpose at the

operational and tactical levels has become more important than ever as the Nation finds itself increasingly reliant on the combined arms potential now available in principle to all Services for continuing to prosecute counterinsurgency and counterterrorist operations, while hedging against future near-peer competitors at a time of unprecedented lows in annual spending for force modernization. **JFQ**

NOTES

¹ Lieutenant General Tad Oelstrom, USAF (Ret.), Director, National Security Program, John F. Kennedy School of Government, Harvard University, June 1, 2006, personal communication with author.

² Vice Admiral Evan Chanik, USN, then-Director, Force Structure, Resources, and Assessment (J8), the Joint Staff, Washington, DC, August 1, 2006, personal communication with author.

³ Major General John L. Barry, USAF, and James Blaker, "After the Storm: The Growing Convergence of the Air Force and Navy," *Naval War College Review* (Autumn 2001), 122.

⁴ Lieutenant Dennis Palzkill, USN, "Making Interoperability Work," *Proceedings* (September 1991), 52.

⁵ Vice Admiral William A. Owens, USN, "The Quest for Consensus," *Proceedings* (May 1994), 68.

⁶ Commander James A. Winnefeld, Jr., USN, "It's Time for a Revival," *Proceedings* (September 1992), 34.

⁷ Admiral William A. Owens, USN (Ret.), *High Seas: The Naval Passage to an Uncharted World* (Annapolis: Naval Institute Press, 1995), 96.

⁸ Captain Yvonne Levardi, USAF, "Air Ops Center Wraps Up Valiant Shield," news release, Office of Public Affairs, Kenney Warfighting Headquarters, Hickam Air Force Base, Hawaii, June 26, 2006.

⁹ Reuven Leopold, *Sea-Based Aviation and the Next U.S. Aircraft Carrier Design: The CVX*, MIT Security Studies Program Occasional Paper (Cambridge: Center for International Studies, Massachusetts Institute of Technology, January 1998), 11.

¹⁰ This figure is a development of a most instructive graphic that originally appeared in David A. Perin et al., *Comparing Land-Based and Sea-Based Aircraft: Circumstances Make a Difference* (Alexandria, VA: Center for Naval Analyses, May 1995).

¹¹ Colonel Brian E. Wages, USAF (Ret.), "Circle the Carriers: Why Does 'Virtual Presence' Scare the Navy?" *Armed Forces Journal International* (July 1995), 31, emphasis added.

¹² Lieutenant Colonel Gene Myers, USAF (Ret.), "Bomber Debates," *Proceedings* (August 1996), 36.

¹³ Vice Admiral John Mazach, USN (Ret.), "The 21st-Century Triad: Unconventional Thinking about the New Realities of Conventional Warfare," *Sea Power* (March 2002), 53.