

General Dunford walks past B-52 aircraft during tour of Andersen Air Force Base, Guam, February 8, 2018 (DOD/Dominique A. Pineiro)



Structuring Airpower to Win in 2030

Designing a Joint Division of Labor Between Land- and Sea-Based Combat Aviation

By Josh Wiitala and Alexander Wright

Lieutenant Colonel Josh Wiitala, USAF, is a B-2A Pilot and Inspector General, 509th Bomb Wing. Lieutenant Commander Alexander Wright, USN, is an F/A-18E/F Pilot and Executive Assistant to the Vice Director, Joint Staff J7 (Hampton Roads). The authors thank Lieutenant Commander Eric Daley, USN, Major Adam Shockley, USAF, and Colonel Anthony Feagin, USA (Ret.), for their contributions to an earlier version of this manuscript written at Joint Forces Staff College.

The Chairman of the Joint Chiefs of Staff characterizes American power projection capabilities as “a key military center of gravity” in the pursuit of 21st century U.S. interests.¹ Potential U.S. adversaries understand this and are pursuing cost-imposing advances in missile technology and electronic warfare focused on preventing both the deployment and employment of U.S. expeditionary forces. These technologies, along with their associated operational postures, are known collectively as antiaccess/area-denial (A2/AD) and have been the subject of rigorous analysis across the Department of Defense (DOD) for nearly a decade.

This series of studies gained high-level attention in 2009 when Secretary of Defense Robert Gates authorized an operational concept known as Air-Sea Battle (ASB). ASB sought to combine American air and maritime forces in new



KC-135 Stratotanker assigned to 340th Expeditionary Air Refueling Squadron, Al Udeid Air Base, Qatar, refuels Navy F/A-18E/F Super Hornet assigned to USS *Theodore Roosevelt*, performing precision airstrikes against six Taliban narcotic targets in Helmand Province, Afghanistan, December 7, 2017 (U.S. Air Force/Jeff Parkinson)

and novel ways that would “disrupt, destroy, [and] defeat” A2/AD systems in order to achieve joint objectives.² ASB was evaluated and refined for over 5 years in “more than two dozen Service, combatant command, joint and allied war games, experiments, studies and exercises.”³ These evaluations not only illustrated the value of closer integration of air and maritime forces, but also revealed that “A2/AD capabilities evolved more quickly than anticipated and could only be dismantled at high levels of risk” under the ASB construct.

As a result, ASB was rescoped and revamped into a new joint concept termed *Joint Concept for Access and Maneuver in the Global Commons* (JAM-GC). This new concept replaced ASB’s comparatively narrow focus on defeating and destroying A2/AD systems with the broader goal of “defeating an adversary’s plan and intent.” JAM-GC also expanded to encompass all five warfighting domains

(land, sea, air, space, and cyberspace) in order to more comprehensively leverage U.S. advantages in overcoming the “challenge of contested access and maneuver in the global commons.”⁴

Going forward, the lessons learned during nearly a decade of concept development must be translated into a joint force structure capable of defeating A2/AD and preserving America’s power projection advantage. However, such a force structure will only be effective if it is pursued through a *joint* approach to acquisitions from concept development through the operational fielding of tomorrow’s warfighting platforms. This article elaborates on how a complementary division of labor between a next-generation, purpose-built carrier air wing and land-based long-range strike bombers could contribute to the air portion of JAM-GC’s multidomain vision for defeating both the “plan” and “intent” behind A2/AD.

Service-Specific Plans

To set the stage for the attributes required in a genuinely joint force structure, our discussion begins with a depiction of the individual plans for the Air Force and Navy for addressing A2/AD in the air domain, beginning with the Air Force’s Air Superiority 2030 Flight Plan (AS 2030).⁵ The overall lead for the study, Brigadier General Alex Grynkewich, asserts American airpower has been so successful in post-Cold War conflicts that “Many can no longer conceive of a world in which U.S. air superiority is not a given”; however, “the world has changed” with the advent of A2/AD.⁶ As a result, AS 2030 operates under the assumption that the United States “may no longer be able to prevent adversaries from operating within [its] own integrated air defenses.” Instead, U.S. airpower “will control [its] airspace for a discrete time

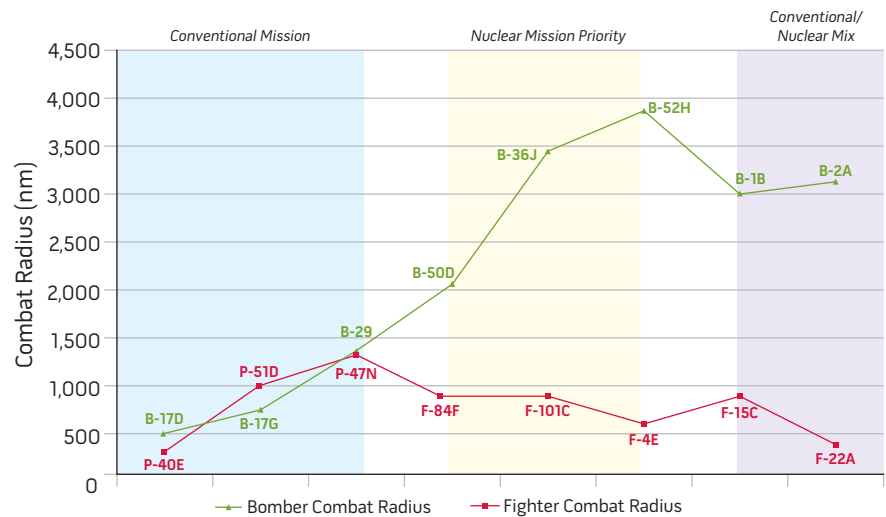
and over a limited area, as defined by the needs of the joint force team.”⁷ This vision for airpower in 2030 coincides with the findings of a Defense Science Board Task Force on Air Dominance and aligns well with JAM-GC’s admission that A2/AD capabilities have progressed at a pace that makes ASB’s initial emphasis on destruction of A2/AD systems an overly risky approach.⁸

Given this new operational environment, AS 2030 envisions a multidomain approach (air, space, and cyberspace) to air superiority with four force structure considerations. Three of these are specifically relevant to JAM-GC’s overarching goals. The first consideration is range, which is simply the ability to operate from distances outside the range of most antiaccess threats, making these threats “more manageable” and preserving the Air Force’s ability to field combat power.⁹ This consideration seeks to reverse the longstanding trend of ever-shrinking fighter range and ever-increasing bomber range illustrated by the figure.

Second, AS 2030 advocates for a mix of “both standoff and stand-in capabilities.” This force structure allows standoff platforms to launch survivable munitions from safe ranges while survivable stand-in platforms provide the timely targeting information to make such strikes effective. The stand-in portion of this force structure will be characterized by a counter-air and strike team comprised of the Air Force’s new penetrating counter-air (PCA) program and the long-range strike-bomber (B-21) program. In this construct, PCA provides “air superiority . . . within the adversary IADS [integrated air defense systems],” while the new stealth bomber destroys “airfields and logistics targets” critical to adversary counter-air efforts.¹⁰

Third, these standoff and stand-in platforms are linked together by “new concepts for multidomain command and control (C2) and new multidomain tactics.”¹¹ Reminiscent of David Deptula’s “combat cloud” concept,¹² this consideration generates “a truly networked and integrated family of capabilities” able to link and therefore leverage all the sensors and shooters in a given area in a seamless

Figure. Divergence of U.S. Fighter and Bomber Combat Radius Post–World War II



Source: John Stillion, *Trends in Air-to-Air Combat: Implications for Future Air Superiority* (Washington, DC: Center for Strategic and Budgetary Assessments, 2015), 52, available at <<http://csbaonline.org/uploads/documents/Air-to-Air-Report-.pdf>>.

and lethal fashion.¹³ This consideration highlights what Chief of Staff of the Air Force General David L. Goldfein terms “War in the Information Age.”¹⁴ In this new environment, “advantage will be achieved through the speed and integration of information.”

Like the Air Force, the Navy conducted its own examination of the problem-set and proposed a slightly different approach to combating A2/AD within its own unique operational and budgetary environments. The essence of this approach is articulated well by former Chief of Naval Operations Admiral Jonathan Greenert who stated:

*It is unaffordable . . . to adapt a platform by replacing either it or its integral systems each time a new mission or need arises. We will instead need to change the modular weapon, sensor, and unmanned vehicle “payloads” a platform carries or employs. In addition to being more affordable, this decoupling of payload development from platform development will take advantage of a set of emerging trends in precision weapons, stealth, ship and aircraft construction, economics, and warfare.*¹⁵

In contrast with the Air Force’s plan, the Navy has already largely bought into

its future force structure from a platform perspective and instead envisions countering A2/AD with increasingly capable payloads able to mitigate risk and enhance offensive operations.

A Vision for Joint Airpower in 2030

The JAM-GC team leads insist that A2/AD requires joint forces that are “distributable, resilient, and tailorable, as well as employed in sufficient scale and for ample duration,” and such attributes are certainly compatible with many of the traits envisioned by individual Service plans.¹⁶ The JAM-GC team is clear, however, that its concept will not impose force structure requirements across the military Services. In short, JAM-GC “will not replace the Services’ unique programming, requirements, and acquisition processes, nor will it direct any specific funding actions.”¹⁷ However, if JAM-GC were allowed to dictate a unique joint force structure from the ground up, it could provide the vision required to secure unity of effort among the Services regarding the A2/AD threat. Given that the Air Force and Navy are looking at large-scale recapitalization of legacy combat aircraft over the next two decades, JAM-GC



B-1 bomber conducts suppression of enemy air defenses training at Ellsworth Air Force Base, South Dakota, July 15, 2016 (U.S. Air Force/Sadie Colbert)

should be the foundation for a division of labor between air- and sea-based combat aviation designed specifically to negate the operational advantages of A2/AD. Today's Air Force and Navy combat aviation forces fight well together but are, with few exceptions, built and scaled to fight independently of each other. If designed to depend on each other for specific functions, such a *purpose-built* approach could yield efficiencies that make the force more effective against emerging threats.

One example of a purpose-built approach exists today in the partnership between the Air Force's penetrating long-range strike community and the Navy's electronic attack community. While every carrier air wing has its own organic complement of EA-18G electronic attack aircraft, the Navy also fields four expeditionary squadrons that operate from land. These squadrons consistently train and integrate with Air Force B-2s outside the normal carrier air wing construct. This longstanding operational relationship facilitates seamless integration between the two communities and reflects a truly joint division of labor for the electronic attack and long-range strike mission sets.

Some argue Air Force retirement of the EF-111/F-4G team without dedicated replacements left the Service with critical capability shortfalls in the electronic attack (EA) and the suppression of enemy air defenses (SEAD) mission sets.¹⁸ But this critique seems to focus on the small size of today's EA/SEAD fleet rather than on today's joint division of labor, which actually represents a rare success in the longstanding pursuit of joint force structure development. If a purpose-built joint division of labor were applied to other mission sets across the joint force, individual Services could develop platforms that intrinsically complemented other joint capabilities from inception through fielding. Applying this concept to the air superiority mission illustrates what a purpose-built carrier air wing could bring to the fight against A2/AD if partnered in a complementary manner with Air Force long-range strike.

The Purpose-Built Carrier Air Wing

Today's carrier air wing is best described as a "jack-of-all-trades," able to effectively transition between counter-air, strike, SEAD, and counter-maritime

missions. This level of flexibility is enabled by the F/A-18 family of strike fighters; however, such adaptability comes at a cost. While today's Super Hornets offer increased speed, maneuverability, and overall survivability over their fleet predecessors, the F/A-18's 370 nautical mile combat radius significantly reduces the carrier air wing's reach compared to previous generation platforms, such as the A-7, with its more than 600 nautical mile combat radius.¹⁹ This dynamic will change somewhat with the introduction of the F-35C. In a stealthy configuration, the F-35 will not be able to match the payload of the F/A-18E/F variants; however, it has a lot to offer the fleet given its advanced sensor suite, next generation datalink, low observable technology, and 613 nautical mile combat radius.²⁰ Yet as a multirole fighter "optimized" for air-to-ground missions, the F-35 will not be tailored to counter key aspects of the A2/AD environment in the same manner as AS 2030's envisioned PCA program.²¹

This is where a truly joint force structure offers important advantages that extend beyond those gained by simply

developing joint platforms. If the Navy relied on Air Force bombers to provide strike capacity and augment the counter-maritime capabilities of the carrier strike group, air wings could focus on the counter-air and, to some extent, SEAD mission sets. Such a change to force structure would not mean that every carrier air wing would convert to this new arrangement; the jack-of-all-trades air wing will remain immensely valuable to American power projection for the foreseeable future, particularly in areas without strong A2/AD capability. However, if specific air wings were designed from the ground up for the counter-air mission, in terms of both force structure and platform attributes, their contribution to JAM-GC would be immense as they provided the temporary air superiority in a contested environment discussed by AS 2030.

The Air Force envisions PCA as the air superiority capability of the future and stresses the need for increased platform range and survivable basing.²² For the Air Force, the concept of survivable basing is inherently influenced by the specific geography of a given scenario. For the Navy, geography certainly matters, but one of the paramount virtues of the carrier is its mobility. In an operational sense, carrier mobility creates bases at more optimized distances from areas of interest. In a tactical sense, carrier mobility increases combat aircraft basing survivability. These dynamics led the Hudson Institute to conclude that a “major reduction in the number of tactical fighter sorties generated from short-range airbases due to aircraft and missiles attacking airbases would place a premium on the ability of the [carrier strike group] to conduct [offensive counter-air] and selective [defensive counter-air] missions, or other missions such as escorting long-range Air Force bombers.”²³

In a recent op-ed, Chief of Naval Operations Admiral John Richardson wrote that A2/AD threats to the surface fleet “represent danger . . . but the threats are not insurmountable.” Instead, he asserts that a “successful engagement requires completion of a complex chain of events [where] each link . . . is vulnerable and can be interrupted.”²⁴ Admiral Richardson’s statement reflects the reality

Table. Bomber Contributions to Conventional Combat Operations Since World War II (%)

	Korea	Vietnam	Desert Storm	Allied Force	Enduring Freedom	Iraqi Freedom
Percent Munitions Delivered	27	44	32	47	66	27
Percent of Combat Forces (USAF, USN)	8	8	3	5	10	7

Source: Michael R. Moeller, *U.S. Bomber Force: Sized to Sustain an Asymmetric Advantage for America* (Arlington, VA: Mitchell Institute for Aerospace Studies, 2015), 13, available at <http://docs.wixstatic.com/ugd/a2dd91_252420b7d1d04ae59b818e72c416af16.pdf>.

that even in an era of highly accurate long-range missiles, mobile targets continue to stress the world’s most advanced long-range kill chains as tacticians develop new employment paradigms for naval forces such as “hit-and-run” tactics that minimize the carrier’s time in a given threat envelope.²⁵ In certain global geographies and threat environments, this enhanced survivability of naval aviation basing will be vital to supplementing land-based air superiority forces in the 2030 timeframe, making it critical that the carrier air wing is able to provide the right portion of American power projection at the appropriate time and place.

Fielding an air wing focused largely on the counter-air mission will require a platform or family of platforms similar to the Air Force’s envisioned PCA program. This future program could end up resembling today’s Joint Strike Fighter program where three Services develop their own variant of the same aircraft. The early phases of the F-35 program, however, illustrate that attempting to field a single aircraft capable of suiting Air Force and Navy requirements can result in delays and cost overruns.

A more germane example of how multiple approaches to the same design requirements can be leveraged to field multi-Service capabilities may be the Lightweight Fighter/Air Combat Fighter program of the 1970s. This program yielded two distinctly different flying prototypes for testing: the YF-16 and YF-17. The Air Force eventually chose the F-16 for production, but the Navy remained reticent to accept a single-engine fighter for carrier operations. However, the Navy saw potential in the YF-17 to provide similar air combat capability as a sea-based

platform and eventually developed it into the highly successful F/A-18 series of strike fighters.²⁶ Air Force and Navy collaboration on PCA could end up working out similarly as each Service applies the differing contexts of land- and sea-based aviation to the requirement to field a purpose-built next-generation air superiority capability able to counter A2/AD.

The Future of Long-Range Strike

The Air Force side of such a joint force structure needs to consider what tailored carrier air wings mean for the size and shape of the B-21 program. Based on the division of labor and purpose-built force structure envisioned in this article, the bomber’s historical advantages in payload become even more critical, which shapes the discussion of how big the B-21 buy needs to be. The table comes from a recent Mitchell Institute study written by Lieutenant General Michael Moeller, USAF (Ret.). It illustrates how bombers provided a high percentage of the munitions expended in every post-World War II conflict but represented only a fraction of the combat aircraft in theater.²⁷

If the joint force fielded tailor-made carrier air wings capable of providing effective escort for land-based long-range strike in the 2030 timeframe, the ability to field penetrating bombers in sufficient mass to capitalize on the modernized force structure described in this article would be essential and should be the subject of in-depth analysis.

On the topic of shaping the B-21 program, Deptula offers three important attributes, in addition to payload, that the B-21 will provide to the joint fight. First, he highlights the value of long-range

bombers able to “swing’ combat power between widely separated theaters of operation” while being based “outside the range of most enemy strike systems.”²⁸ This flexibility would be critical in taking advantage of the temporary air superiority created by both land- and sea-based PCA aircraft in areas potentially separated by long distances. Second, Deptula stresses the importance of high survivability.²⁹ As part of the stand-in force packages described by AS 2030, the stealthy B-21 will be survivable against high-end threats.³⁰ Third, he discusses the need for the versatility to adapt. This attribute is best understood through his assertion that the next bomber should be known as a “long-range sensor shooter” that can rapidly integrate new capabilities.³¹ As part of the purpose-built joint team envisioned here, this attribute would be critical to ensuring long-term interoperability with the rest of the networked force. Deptula’s depiction of the new bomber’s attributes is important because it builds on yesterday and today’s combat successes in a manner that accounts for evolving threats, while modernizing the features that made the bomber force such a critical part of American power projection since the start of World War II.

Evolving JAM-GC and AS 2030

JAM-GC, along with Service-specific plans, provide a solid conceptual foundation for building an optimized joint airpower force structure capable of winning in 2030. This does not mean, however, that these concepts should not continue to evolve. For example, JAM-GC’s emphasis on preserving America’s ability to conduct offensive operations across the globe should not preclude supplemental defensive approaches when appropriate. In the post-Cold War world, most U.S. foreign policy interests revolve around maintaining existing security architectures and defending regional allies from aggression. In an era when A2/AD capabilities are increasingly effective at contesting power projection, the United States should exploit the convergence of its largely defensive foreign policy goals with the relative rise of defensive capabilities.³² The potential

value of this type of A2/AD approach implemented by the United States and its partners is clearly illustrated by the sharp reaction of competitor states to even modest deployments of advanced U.S. defensive technologies to key allies around the world.³³

This approach does not diminish the absolutely critical task of modernizing American power projection. However, defensive approaches should be seen as playing an important supporting role to this enduring “source of strength” in the pursuit of 21st-century U.S. interests.³⁴

Similarly, Service plans must continue to evolve as well. One area that deserves ongoing attention across both land- and sea-based aviation is the potential for teaming “good enough” unmanned aircraft with higher end manned platforms. Given the high cost of combat aircraft, the joint force must explore ways of increasing capacity at an affordable price point in order to combine the highly capable sensors and networks of high-end platforms with the capacity of lower cost unmanned aerial systems.³⁵ AS 2030’s discussion of potentially “bending the cost curve” for massed low-cost systems through advanced manufacturing techniques shows promise in this regard and could enable airpower, as a platform-reliant force, to take the operational risks required to defeat A2/AD at an acceptable cost.³⁶ In short, effective manned-unmanned teaming may be required to ensure airpower remains a cost-imposing means of waging war.

Conclusion

A2/AD is changing the way America projects power through the air. Blending the payload and range of Air Force penetrating long-range strike platforms with the counter-air and SEAD capabilities of a next-generation, purpose-built carrier air wing would help preserve America’s power projection advantage into the 2030s. Building this force structure requires a joint approach to acquisitions from the beginning that goes beyond basic interoperability to embrace a genuinely joint division of labor built on the relative strengths of land- and sea-based combat aviation.

Just over 30 years ago, DOD reorganized under the Goldwater-Nichols Act to close organizational seams between commanders and joint warfighters in order to win on the battlefield. Winning on tomorrow’s battlefield will require a similar level of jointness to close seams in the acquisition process between tomorrow’s warfighting platforms.

JAM-GC’s predecessor concept, ASB, envisioned this type of approach to acquisitions in a 2013 implementation plan. It advocated for the development of a “pre-integrated joint force” where “solutions and innovations are collaboratively developed and vetted to ensure they are complementary where appropriate, redundant when mandated by capacity requirements, fully interoperable, and fielded with integrated acquisition strategies.”³⁷ Whether this level of collaboration is achieved within existing mechanisms such as the Defense Planning Guidance, accomplished through targeted acquisitions reform, or pursued as part of a major reorganization on the scale of Goldwater-Nichols, building an effective joint airpower team for 2030 will require a new approach that effectively translates today’s visionary concepts into tomorrow’s joint force structure. JFQ

Notes

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²³ Seth Cropsey, Bryan G. McGrath, and Timothy A. Walton, *Sharpening the Spear: The Carrier, the Joint Force, and High-End Conflict* (Washington, DC: Hudson Institute, October 2015), 42, available at <<https://s3.amazonaws.com/media.hudson.org/files/publications/201510SharpeningtheSpearTheCarriertheJointForceandHighEndConflict.pdf>>.

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²⁵ Cropsey, McGrath, and Walton, 52.

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Cross-Functional Teams in Defense Reform: Help or Hindrance?

By Christopher J. Lamb



There is strong bipartisan support for Section 941 of the Senate’s version of the National

Defense Authorization Act for 2017, which requires the Pentagon to use cross-functional teams (CFTs). CFTs are a popular organizational construct with a reputation for delivering better and faster solutions for complex and rapidly evolving problems. The Department of Defense reaction to the bill has been strongly negative. Senior officials argue that Section 941 would “undermine the authority of the Secretary, add bureaucracy, and confuse lines of responsibility.” The Senate’s and Pentagon’s diametrically opposed positions on the value of CFTs can be partially reconciled with a better understanding of what CFTs are, how cross-functional groups have performed to date in the Pentagon, and their prerequisites for success. This paper argues there is strong evidence that CFTs could provide impressive benefits if the teams were conceived and employed correctly.



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