Airman helps Marine load missile at Kunsan Air Base, South Korea (U.S. Air Force/Armando A. Schwier-Morales)

Cross-Domain Synergy
Advancing Jointness

By William O. Odom and Christopher D. Hayes

Today the separate military Services that make up America's Armed Forces work together more often than at any time in the Nation's history. Their success over the last decade of war has cemented the power of "jointness" in accomplishing military objectives. Our ability to integrate land, sea, air, space, and cyberspace military capabilities is unmatched.

But despite tremendous progress in achieving jointness, U.S. forces still lack the ability to integrate seamlessly. Moreover, the ability to sustain and build on the considerable gains achieved in the conduct of joint operations is uncertain as our Armed Forces reset from a decade of sustained combat to face a future of complex challenges and constrained resources.

In a recent *Foreign Affairs* article, the Chairman of the Joint Chiefs of Staff explained these challenges to the external audience and highlighted the importance of cooperation among the Armed Forces.[1] Within our ranks, improved cooperation hinges on viewing military problems from a comprehensive cross-domain perspective rather than viewing them through an individual Service lens. To support this shift in focus, the Joint Staff introduced cross-domain synergy as a central idea in recent joint concepts. This article expands on the idea of "cross-domain synergy" by exploring its

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Marine launches Puma unmanned aircraft system at Patrol Base Boldak (U.S. Marine Corps/Bobby J. Yarbrough)

historical roots, summarizing its usage in recent joint publications, and noting implications for the future joint force.

What Is Cross-Domain Synergy?

The Department of Defense (DOD) recognizes five domains: land, sea, air, space, and cyberspace.[2] Physical space delineates the land, sea, air, and space domains with the physical characteristics of each determining the relative capabilities and vulnerabilities of the actions that occur within them. Cyberspace has different physical characteristics than the geographic domains. It is a crosscutting global domain within the information environment consisting of the interdependent network of information technology infrastructures including the Internet, telecommunications networks, computer systems, and embedded processors and controllers.[3] Synergy is the interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects. Cross-domain synergy

is achieved when the integrated use of land, sea, air, space, and/or cyberspace capabilities produces a combined effect greater than the sum of the separate effects.[4] In military application, cross-domain synergy is the use of two or more domains to achieve a military advantage. This frequently involves application of capabilities from one domain to another, with the principal aims of improving operational performance and reducing unnecessary joint force redundancies.

Cross-Domain Operations Are Not New

While the term *cross-domain synergy* is new, the underlying concept derives from the age-old military maxim that advises commanders to approach the enemy asymmetrically—to apply strength against an adversary's weakness while protecting one's own vulnerabilities. The history of warfare is rife with use of asymmetry in strategy, operations, tactics, and technology to defeat an enemy. The ability to operate fluidly

in more than one domain can afford decisive advantages.

The U.S. military has operated in multiple domains throughout its history. Before it could fly, the United States combined land- and sea-based capabilities to win pivotal victories at Yorktown (1781), Vicksburg (1863), and Santiago (1898). With the advent of flight, the Army, Navy, and Marine Corps added air domain–based capabilities to their growing and rapidly modernizing arsenals. In World War II and Korea, amphibious landings exemplified cross-domain operations. Advances in aviation technology eventually led to the establishment of a separate Service with responsibility for the air domain even as the Army, Marine Corps, and Navy continued to develop their own air capabilities. Most Services have since expanded their organic cross-domain portfolios to include space- and cyberspace-based capabilities.

At first, physical domains largely defined the Services, with the Army focused on land, the Marine Corps and Navy on sea, and the Air Force on air operations.

As each developed cross-domain capabilities to support its activities within a specified geographic domain, it reaped the benefits of cross-domain capabilities without the need for inter-Service coordination.[5] In the last 50 years, technological advances significantly increased the reach of each Service's land, sea, air, space, and cyberspace capabilities and largely erased the geographic distinctions that once delineated the Service's operational domain. As a result, joint operations became increasingly commonplace as each Service took advantage of the additional and often unique capabilities offered by other Services. Today the overlap between Service capabilities is so great that it has shifted the focus of joint operations from coordination along the seams of geographically defined Service boundaries to *integration of Service capabilities within shared domains.* To leverage the Armed Forces' cross-domain capabilities fully, the Services must embrace an evolved understanding of jointness. This has become abundantly clear over the last decade.

Leveraging Cross-Domain Synergy

In recent combat operations, the U.S. military has integrated Service capabilities in ways unlikely to happen in peacetime. Wartime demands have accentuated appreciation of jointness and accelerated the development of joint solutions. A generation of future military leaders has learned through firsthand experiences from Panama through Afghanistan that joint operations offer a greater range of capabilities than single Service operations and that the benefits of combining Service capabilities outweigh the costs. Integration of special operations and general purpose forces along with intelligence, surveillance, and reconnaissance capabilities and the enormous expansion of integrated fires are among the notable examples of improved jointness generating successful multi-Service cross-domain operations.

Recently published concepts, informed by military operations ranging from combat to humanitarian assistance, highlight the synergistic potential of jointness. Four years ago, the *Capstone Concept for Joint Operations V3.0* called for achieving "joint synergy" and noted the importance of thinking in terms of joint functions independent of a specific Service. Last year, the *Joint Operational Access Concept V1.0* (JOAC) expanded the idea of joint synergy by shifting the focus from Service capabilities to domain-based capabilities. The JOAC cited leveraging cross-domain synergy as the central idea of the concept and envisioned a "seamless application of combat power between domains, with greater integration at dramatically lower echelons than joint forces currently achieve." Most recently the *Capstone Concept for Joint Operations: Joint Force 2020* reinforced the idea of cross-domain synergy by specifying that "cross-domain synergy should become a core operating concept in all joint operations" and calling for better integration of joint forces to achieve this effect. These documents reflect the complexity of the changing security environment, embrace the pace of technological advancements, and underline the necessity of combining capabilities within and across domains to optimize our ability to respond to threats. These concepts acknowledge that jointness is the key to conducting operations across domains and this ability gives the U.S. military an asymmetric advantage with the potential to create decisive synergy. They emphasize viewing military problems from a multidomain perspective without regard for Service ownership of the domain or assets. They apply across the spectrum of military activities from combat operations to humanitarian missions and operations other than war.

Implications for the Joint Force

The creation of cross-domain synergy requires approaching military problems from a multidomain perspective. It entails building a comprehensive view of the adversary and the environment, understanding available capabilities, and integrating those capabilities. The key is to advance jointness from integrated Service efforts to a singular multidomain effort.

First and Foremost, the U.S. Military Must Understand Both the Adversary and the Environment. Knowing the enemy is a prerequisite to effective military operations and achieving synergy in operations against it. In addition to assessing an adversary's military capabilities, the defense establishment must better understand the human factors derived from cultural, ideological, and political motivations that shape the enemy's intentions and actions. No less important is understanding the physical environment and the myriad factors that influence the combatant's decisions. Today the United States faces adversaries who are patient, persistent, and elusive—adversaries who have learned to hide from the Nation's overwhelming military capabilities and exploit its weaknesses. This new challenge requires broadening intelligence analysis to include cross-domain perspectives on the enemy's potential weaknesses to identify its motivation, critical vulnerabilities, and ultimately its center of gravity. Integrating the unique perspectives of the 16 separate agencies of the U.S. Intelligence Community as well as those of foreign partners can contribute to developing the strategy, operations, and tactics to defeat the enemy. A comprehensive cross-domain view of the enemy may identify vulnerabilities that might have passed unnoticed when seen through the narrower lens of a single Service or agency, and offer expanded opportunities to strike at weak points from the land, sea, air, space, and cyberspace. The nature of intelligence work makes this inherently difficult, but the benefits of a holistic understanding of the rival system, developed through joint, combined, and interagency intelligence analysis, far outweighs the challenges. In peacetime, intelligence development (collection, analysis, processing, and dissemination) should be the main effort.

The U.S. Military Must Broaden Its Knowledge of Available Capabilities. The scope of American military capabilities is potentially overwhelming, and the list continues to grow and evolve. It takes years to learn how to employ a single Service's capabilities, not to mention staying abreast of new tactics,

Marines provide security at landing zone near Boldak, Afghanistan, during Operation *Pegasus II* (U.S. Marine Corps/Austin Long)

techniques, procedures, and technical innovations. Formal education in joint operations usually occurs only after 10 years of immersion in Service-specific programs. However, practical exposure to joint operations is occurring much earlier and more often than in the past. In some specialties, familiarity with relevant joint capabilities is a critical individual skill, especially in the growing number of jobs that routinely employ capabilities from multiple domains. Servicemembers traditionally tended to look to their parent Services first, then elsewhere when seeking solutions to military problems. Achieving cross-domain synergy requires a mindset that expands beyond traditional Service perspectives to embrace all capabilities without undue consideration of the source.

The U.S. Military Must Improve Its Ability to Access and Integrate Service Capabilities. The bumpy transition from Service-centric to joint operations is still incomplete despite 30 years of predominantly joint operations. Make no mistake, American forces have made progress, but the task of accessing and integrating Service capabilities remains complicated even after a decade of war. Observations from joint training events and exercises reveal tendencies to cling to ownership of capabilities rather than accepting assured access to them, and a few holdouts still believe a single Service can do it all without leveraging joint capabilities. This mindset persists in part because the laws that establish and regulate our Armed Forces reinforce Service-centricity. Even those who favor jointness tend to define it from the perspective of enabling their Services. As a result, "joint" is still shaped by the personality and experiences of the senior joint commander rather than by common standards.

Evolving Our Thinking on Jointness

The watershed Goldwater-Nichols Act provided a tremendous external stimulus driving the imperative to achieve Service integration across DOD. The

next evolution in jointness must be internally driven and center on the ability to achieve cross-domain synergy by shifting the focus to employing capabilities without regard for Service origin. This shift hinges on building trust and shared understanding by educating leaders earlier and routinely participating in joint training throughout careers—by expanding the scope of the profession of arms to include employing the full range of capabilities. It also requires development of streamlined means to access and integrate capabilities. Despite efforts to function as an interoperable joint force, the military still lacks the authorities, relationships, procedures, and technology to do it without effort. Again, the U.S. military does this better than at any time in its history, but it still cannot reach across Service boundaries and employ cross-domain capabilities with the speed and dexterity it seeks. The JOAC acknowledges many risks associated with

integrating cross-domain capabilities, most notably that cross-domain operations could become too complex to be practical. While this is an important consideration, it does not preclude pursuing the concept and moving toward an interoperable joint force capable of creating battlespace synergy through seamless cross-domain operations. The impetus to achieve cross-domain synergy, however, should never supplant the imperative to select the simplest, most efficient solution.

A domain-based view of capabilities not only bridges the Services, but also reaches across combatant command boundaries. The global nature of current military operations often requires the ability to act across two or more combatant command areas of responsibility. In fact, "globally integrated operations" *is* the capstone concept for *Joint Force 2020.* Conducting cross-domain operations within a single area of responsibility is difficult, but it is even harder when

the operation involves multiple combatant commands. Combatant commands remain relatively independent multi-Service organizations, each tailoring joint and combined operating procedures to match theater needs. At the same time, the blurring of simultaneous supporting-supported relationships demands reexamining what interoperability truly requires. Globally integrated operations—and the implied requirement to access and integrate capabilities from multiple combatant commands—necessitate greater commonality in materiel, procedures, and policies to achieve cross-domain synergy.

Another well-known, persistent challenge to achieving cross-domain synergy is accessing and integrating U.S. Government agencies and foreign partners. Put simply, DOD lacks the authority to direct changes that would permanently solve the problem because they are external organizations or they serve other nations. Clearly defined relationships and

authorities will advance the military's ability to leverage the unique capabilities these partners bring to operations. Leaders must remain sensitive to the challenges of partnering even as they continue to focus on achieving cross-domain synergy within the "unity of effort" framework.

Conclusion

The employment of cross-domain capabilities to exploit enemy weaknesses and achieve decisive victory is not a new idea, but much has changed in recent years. Cross-domain operations have expanded beyond the combination of land and sea operations to include capabilities delivered from the air, space, and cyberspace. Modern technology has vastly increased available capabilities and these capabilities are rarely controlled exclusively by any single Service. Nor are they the exclusive tools of superpowers and nation-states. Technology, proliferation, and

global integration of networks have eroded much of the U.S. advantage in military power and technology. At the same time, other government organizations and foreign partners offer unique capabilities that can dramatically affect the outcome of military operations. The problems the U.S. military faces are more complex, but it has a greater quantity, quality, and variety of tools with which to solve them because the joint force's ability to achieve cross-domain synergy is at an all-time high. However, two postwar trends risk undermining the tremendous gains the Armed Forces have made in their ability to execute joint operations and achieve cross-domain synergy. First, the end of combat operations in Iraq and Afghanistan will remove a powerful impetus for inter-Service cooperation. Second, defense budget reductions could result in prioritization of unique Service requirements over joint requirements.

Soldier inspects static line before jumping from C-17 Globemaster III during mission in support of Joint Operations Access Exercise 12-2 (DOD/Eric Harris)

Ultimately, achieving cross-domain synergy is about evolving the understanding of jointness. Cross-domain perspectives on military problems advance jointness. Improved jointness enables more effective combination of the capabilities of the Armed Forces and the achievement of cross-domain synergy in joint operations. To improve jointness the military needs to shift from Service-centric approaches to a mindset that holistically views the military problem and considers the full range of available capabilities. It also requires changes in the way the military accesses and integrates capabilities, essentially transcending Service and combatant command ownership of capabilities and assuming a global perspective on military operations to achieve globally integrated operations.

Historically, the end of combat operations removes the impetus for Service cooperation, and budget reductions result in prioritization of Service requirements over joint requirements. It is certain that any future military operation will involve joint forces exercising cross-domain capabilities. Therefore it is vital that the military forge the next joint force based on the lessons of recent combat experiences. Those experiences not only validate the effectiveness of jointness as the key to achieving cross-domain synergy, but also highlight persistent challenges in joint operations. Expanding the military mindset to encompass cross-domain perspectives builds the trust and shared understanding the military needs to address the challenges of joint operations within a larger interagency and multinational context. **JFQ**

Notes

[1] Martin E. Dempsey, "The Future of Joint Operations: Real Cooperation for Real Threats," *Foreign Affairs*, June 20, 2013, available at <www.foreignaffairs.com/articles/139524/martin-e-dempsey/the-future-of-joint-operations>.

[2] This categorization pertains to places from which we apply military capabilities and is not to be confused with other models that explore warfare in terms of cognitive, moral, and human "domains." In a recent article titled "Joint Force 2020 and the Human Domain: Time for a New Conceptual Framework?" in *Small Wars Journal*, the authors make a valid case for the centrality of human interaction in all military actions.

[3] Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: The Joint Staff, November 8, 2010, as amended through December 15, 2012), 74.

[4] The JOAC elaborates by stating that *cross-domain synergy* is "The complementary vice merely additive employment of capabilities in different domains such that each enhances the effectiveness and compensates for the vulnerabilities of the others—to establish superiority in some combination of domains that will provide the freedom of action required by the mission."

[5] Not all cross-domain operations are inherently "joint," such as when one Service provides all the land, sea, or air forces. For example, an all-Marine Air-Ground Task Force operation is not joint, yet it typically operates in three domains. On the other hand, not all joint activities are necessarily cross-domain, as when the Air Force and Navy team up to execute air superiority missions or Army and Marine Corps units share ground security missions.