

A Culture of Military Spacepower

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During a May 2019 exit interview with the national media, outgoing Secretary of the Air Force Heather Wilson identified the development of a war-fighting culture as the most pressing challenge confronting the Air Force space mission.¹ This challenge persists despite a range of recent and historical Air Force initiatives aimed at developing and strengthening an independent space war-fighting culture. In 2001, the US Space Commission recommended the Air Force strengthen its military space culture through focused career development, education, and training.² This recommendation was the foundation of the Air Force Space Command's (AFSPC) Space Professional Development Program and the Space100, -200, and -300 professional military education sequence.³ In 2002, the Air Force eliminated the phrase *aerospace power* from its institutional lexicon, replacing it with the phrase *air and space power*. When defending this decision, Gen John P. Jumper, the 17th USAF chief of staff, stated, "[the Air Force] will respect the fact that space is its own culture, and that space has its own principles."⁴ In 2005, Gen Lance W. Lord, the 12th AFSPC commander, authorized the wear of a space badge to "unify our USAF credentialed space professional community under a single space badge—a recognizable, distinctive symbol of the unique and challenging space mission and those who execute it."⁵ Most recently, Acting Secretary of the Air Force Matthew P. Donovan advocated that a separate US Space Force within the Department of the Air Force (DAF) would forge the unique culture required to unleash the power of space in an age of great-power competition.⁶ While important, all of these initiatives fail to address the foundational impediment restraining the development of a space war-fighting culture within the Air Force. The first step toward establishing a space war-fighting culture is enshrining the purpose and identity of Air Force space forces within basic doctrine centered around an independent and authoritative formulation of military spacepower.

This article presents why and how the Air Force should use basic doctrine to shape the purpose, identity, and culture of Air Force space forces. A brief survey of organizational culture theory is followed by a discussion on how doctrinal theories of military power shape the purpose, identity, and culture of land, maritime, and air forces. Next, this article will show how military spacepower doctrine

remains underdeveloped within Air Force basic doctrine. Finally, this article will present the cornerstone principles of an independent framework for military spacepower—national space interests, joint interdependence, and unique space expertise—designed to set the conditions for a space war-fighting culture to develop and thrive. These recommendations are independent of any Congressional action to reorganize US military space forces. Whether the AFSPC remains in the Air Force or becomes the foundation of a separate military service, incorporating the three principles described here into capstone service doctrine is a critical element in the development of a space war-fighting culture.

Shifting from a Servicing Culture to a War-Fighting Culture

The foundations of the space servicing culture are well-documented.⁷ In brief, this culture arose to minimize disruptions to space services in the absence of a credible threat to US space superiority following the end of the Cold War. The uninterrupted delivery of space capabilities, such as missile warning and precision navigation and timing (PNT), is so critical to the Joint Force that even the slightest disruption may result in mission failure. Without a credible threat to organize against, the space community adopted a servicing culture similar to commercial information service providers. Human error—not a thinking adversary—presented the largest and most probable threat to service delivery. In this environment, Air Force space operations were routinized to minimize the human element and maximize service reliability. National policy reinforced this culture, declaring space a sanctuary from attack and curtailing the culture required to protect and defend space assets against a thinking adversary.⁸

The servicing culture is no longer appropriate for military space operations. Emerging threats to US space superiority have invalidated the assumptions of the space community's servicing culture. The most recent *National Security Strategy* formally and authoritatively declares space a war-fighting domain and recognizes the existence of credible threats to US space superiority.⁹ Building on this declaration, Space Policy Directive-4 makes clear the organization, policies, doctrine, and capabilities of the national security space community must evolve to defeat these threats.¹⁰ The culture of Air Force space forces must also evolve, synchronized with the guidance, intent, and policy directives of our national leadership.

Scrutinizing the academic definition of *organizational culture* demonstrates why shifting from a space servicing culture to a space war-fighting culture is an operational imperative for the Air Force. *Organizational culture* is defined as a group's shared approach to external adaption and internal integration problems.¹¹ Culture captures a group's shared and accepted approach to the challenges of uncertainty, problem solving, and innovation. In the interest of precision, it is worth noting that

organizational culture and organizational climate are different concepts. While organizational culture defines an organization's values when taking action, the term *organizational climate* captures the shared experience of group members based on accepted norms of behavior.¹² While both culture and climate are important, this article focuses on the development of a space war-fighting culture.

Servicing cultures are system-centric. These cultures approach the problems of adaption and integration seeking to optimize the availability of a static system. Human error and system reliability are the dominant sources of uncertainty that servicing cultures coalesce to solve. A servicing culture values fault management, standardization, and centralization as acceptable approaches to problem solving and innovation. To minimize human error, dynamic decision making is discouraged in favor of routinized procedures and centralized tactical decision making.

War-fighting cultures are adversary-centric. Problems of external adaption are defined by a thinking, competent, and lethal adversary who threatens American interests. Problems of internal integration focus on the perpetual pursuit of combat readiness. Problem solving starts with the assumption of a competent and lethal adversary, and innovation seeks a relative advantage over that adversary. Victory and defeat—not system availability—are the most important measures of effectiveness. A war-fighting culture fights through uncertainty in a dynamic environment by seizing the initiative through decentralized execution and the principles of mission command. Shifting from a servicing culture to a war-fighting culture (fig. 1) implies certain behavior changes. Technicians become tacticians, schedulers become mission planners, and system watch officers become battle managers.¹³ In a war-fighting culture, the imperative for victory engenders a tenacious fighting spirit and the unbreakable resolve to outmaneuver and dominate an adversary.



	 Servicing Culture	 Warfighting Culture
Organizational Focus	System centric	Adversary centric
Organizational Objective	Maximize availability of a static system	Deter and defeat a thinking, competent, and lethal adversary
Handling Uncertainty	Preserve system health, status, and reliability through centralization	Seize the initiative through decentralized execution and the principles of mission command
Pursuing Innovation	Fault management, routinized procedures, and standardization	Endless pursuit of a military advantage over adversaries
Key Roles	Technician	Tacticians
	Schedulers	Mission Planners
	System Watch Officers	Battle Managers
Measure of Success	System availability	Winning amidst a competitive environment

Figure 1. Air Force space forces must shift from a servicing culture to a war-fighting culture

Purpose Shapes Identity; Identity Shapes Culture

With these definitions in mind, how should the Air Force proceed in developing a war-fighting culture within its space community? The study of organizational culture theory reveals that a unifying culture can only emerge after a group's purpose and identity are clearly understood and broadly accepted.¹⁴ *Purpose* captures the existential tasks a group is chartered to accomplish while *identity* captures how group members view their group relative to other groups. Stable cultures emerge when a unifying purpose and group identity are broadly recognized and understood. Thus, the connection between purpose, identity, and culture can be condensed into an axiomatic relationship: purpose shapes identity, and identity drives culture (fig. 2).

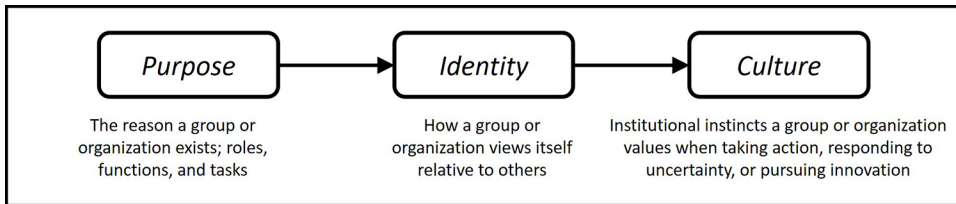


Figure 2. Organizational purpose shapes identity, and identity drives culture

Across the US military, capstone doctrine—that is, basic doctrine in Air Force parlance—provides the authoritative formulation of purpose and identity for military forces. This authority makes capstone doctrine the most important encapsulation of the beliefs, values, and assumptions that underpin military culture within each branch of the armed forces. Army Doctrine Publication 1, *The Army*, champions the primacy of land power, delineates the Army's contribution to national security, and describes a professional warrior ethos rooted in seven common values.¹⁵ The Air Force's *Volume I, Basic Doctrine* espouses the independence of airpower and the air-mindedness expertise unique to Airmen.¹⁶ Naval Doctrine Publication (NDP) 1, *Naval Warfare*, anchors the purpose, identity, and core values of US naval forces to the importance of American sea power.¹⁷ Marine Corps Doctrine Publication (MCDP) 1-0, *Marine Corps Operations*, builds upon NDP 1 by emphasizing how maneuver warfare, mission command, and an enduring relationship with the Navy defines the rapid and expeditionary nature of Marines Corps operations.¹⁸ Capstone doctrine is not culture. However, by authoritatively defining service purpose, capstone doctrine shapes institutional identity, and hence, culture. Furthermore, war fighters in every domain connect their purpose and identity to an independent theory of military power: land power, airpower, and sea power. A review of the history and evolution of Air Force basic doctrine reveals that Air Force space forces lack a unified, independent, and authoritative formulation of military spacepower from which to derive purpose and identity (fig. 3).

<u>Doctrine</u>	<u>Purpose</u>	<u>Identity</u>
	<p>"Seapower has been and will continue to be the critical foundation of national power and prosperity and international prestige for the United States of America."</p>	<p>"We are the United States Navy and United States Marine Corps, our Nation's seapower—ready guardians of peace, victorious in war."</p>
	<p>"Landpower enables the Nation's leaders to respond to security challenges in definitive and decisive ways... Landpower protects our national interests, brings order to chaos, and protects populations."</p>	<p>"Our Soldiers make the Army the most capable land force in the world, which in turn maintains U.S. credibility and security."</p>
	<p>"Through airpower, the Air Force provides the versatile, wide-ranging means towards achieving national objectives with the ability to deter and respond immediately to crises anywhere in the world."</p>	<p>"Air Force doctrine presents airpower as a unitary construct. The Air Force acknowledges the importance of the space and cyberspace domains. However, Air Force doctrine should address what unifies Airmen."</p>

Figure 3. Capstone doctrine sets conditions for organizational culture by providing the authoritative formulation of the purpose and identity of military forces. Source: NDP-1, *Naval Warfare*, March 2010; *A Cooperative Strategy for 21st Century Seapower* (Washington, DC: Department of the Navy, 2015); ADP-1, *The Army*, July 2017; and ADP 3-0, *Operations*, Vol. I, *Basic Doctrine*, July 2017)

The Evolution of Spacepower Theory in Air Force Doctrine

The idea that airpower and spacepower are one and the same is almost as old as the US space program itself. Gen Thomas D. White, the fourth chief of staff of the Air Force, first expressed this idea in 1958, declaring "air and space are indivisible" just one month after the first successful launch of a US satellite.¹⁹ The term *aerospace power* consolidated airpower and space operations into a single framework and became official Air Force doctrine in 1959 with the publication of Air Force Manual (AFM) 1-2, *United States Air Force Basic Doctrine*.²⁰ For the next 47 years, Air Force basic doctrine would continue to use a unitary definition of aerospace power, though small changes would be introduced. For example, the Air Force introduced the term *space force enhancement* in 1979 and *counterspace* in 1982.²¹ Despite small changes and evolutions, during this period Air Force basic doctrine viewed space operations as an element of aerospace power. Air Force senior leaders succinctly expressed the unitary theory of aerospace power in a 2000 white paper. "Our Service views the flight domains of air and space as a seamless operational medium. The environmental differences between air and space do not separate the employment of aerospace power within them."²²

The aerospace power formulation lasted until 2002 when General Jumper replaced the term *aerospace power* with *air and space power*, noting that the legacy term did not “give the proper respect to the culture and to the physical differences that abide between the environment of air and the environment of space.”²³ For the first time in Air Force institutional history, airpower and spacepower were viewed as separate theories of military power. Following this split, the Air Force published Air Force Doctrine Document 2-2, *Space Operations*, in 2006. While this served as the first full Air Force treatment of spacepower doctrine, the AFDD 2-2 framework still constrained spacepower as an enabler and force multiplier to combat operations in other domains.²⁴

Air Force spacepower doctrine would be short-lived. The Air Force abandoned spacepower doctrine and returned to a unitary definition of airpower in 2011, again placing space operations as part of the larger airpower framework.²⁵ Today, Air Force doctrine defines *airpower* as “the ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives.”²⁶ Conversely, Air Force doctrine does not include a formal theory of military spacepower in any official publication. *Air Force Doctrine Annex 3-14* provides operational-level doctrine for Air Force space operations but does not include an independent formulation of military spacepower and makes no attempt to deliberately shape the purpose and identity of Air Force space forces.

In the absence of credible threats to US space superiority, the airpower-centric approach to space operations was an overwhelming success. This partnership ignited an unprecedented level of cross-domain synergies between air and space capabilities. Space-based PNT enabled the joint direct attack munition and transformed the accuracy and lethality of joint fires. The integration of wideband satellite communication onto air platforms permitted the development of a globally integrated intelligence, surveillance and reconnaissance architecture. Persistent missile warning impacts strategic deterrence in every domain. In short, the airpower-centric approach to space operations that has been codified in Air Force doctrine since 1959 has fundamentally transformed every joint function. This transformation persists across the range of military operations and the entire spectrum of conflict.

Despite these unprecedented synergies, interweaving space operations within airpower doctrine reinforces three false equivalencies. First, a unitary approach to airpower reinforces the false assumption that airpower and spacepower impact national policy objectives through shared ways and means. Second, connecting space operations as a subset of airpower falsely assumes that the same principles guide the application of airpower and spacepower in a military context. Third, this

approach presupposes that the air-mindedness perspective of military power is the optimal perspective for military space forces. These assumptions are more than semantic. They underpin the very purpose and identity of military space forces. Accepting these assumptions without an independent theory of spacepower undermines the formation of purpose, identity, and culture within Air Force space forces and unnecessarily inhibits the impact military space operations can have on national policy objectives. Because of the strong connection between purpose, identity, and culture, Air Force efforts to cultivate a space war-fighting culture must start with the acceptance and publication of an authoritative formulation of independent military spacepower doctrine.

A War Fighter's Conception of Military Spacepower

While the Air Force lacks an institutional theory of military spacepower, a multitude of proposed spacepower frameworks exist. These theories date back to 1958 when Donald Cox and Michael Stoiko published the book *Spacepower: What it Means to You*.²⁷ Since this initial publication, David E. Lupton, Peter L. Hays, Brig Gen Simon P. Worden and Maj John E. Shaw, James E. Oberg, M. V. Smith, Everett C. Dolman, and John J. Klein have all made important contributions.²⁸ The Air Force can draw heavily on these sources when formulating an institutional theory of military spacepower within its basic doctrine; however, the final formulation must accentuate three themes to set conditions for a space war-fighting culture. These themes are: vital national space interests, joint interdependence, and unique space expertise. Taken together, these three principles would be institutional recognition that Air Force space forces are expert practitioners of an independent discipline of military power unique to the space domain. This purpose, in turn, shapes the identity of Air Force space forces as coequals with the war fighters responsible for military power in the air, maritime and land domains.

Theme 1: Space is vital to national power and prosperity. First, Air Force doctrine must differentiate between national spacepower and military spacepower in a way that captures the vital role military space forces play in securing national interests. Maritime doctrine provides an appropriate analogy for this distinction. While the term *naval power* represents military power at sea, *sea power* describes the totality of a nation's use of the maritime domain in pursuit of national power and prosperity.²⁹ Borrowing this construct, *national spacepower* is defined here as the totality of a nation's use of the space domain in pursuit of national power and prosperity. This construct recognizes that space is a conduit of national power through which diplomatic power, economic power, information power, and military power can be generated, applied, and exploited. In this regard, space is no different than the land, maritime, air, and cyberspace domains. Thus, national

spacepower includes political, economic, information, and military elements. As one element of national spacepower, *military spacepower* is defined here as a nation's ability to accomplish military objectives through the control and exploitation of the space domain.

Distinguishing between national spacepower and military spacepower recognizes that a grand space strategy amplifies all four instruments of national power: diplomacy, economy, information, and military. Space exploration strengthens diplomatic power by conferring national prestige and generating opportunities for peaceful multinational cooperation. The commercial space industry is a rapidly growing segment of the US economy with limitless potential. Information derived from space-based remote sensing is the core of US global information dominance. Because the elements of national spacepower are mutually reinforcing, unified action with civil, commercial, and intelligence community space programs is an important attribute of the proper employment of military spacepower. US military spacepower must reflect the nation's political, economic, information, and military interests. To solidify purpose and identity, Air Force space forces must appreciate these other elements of national spacepower and understand military spacepower's unique role securing vital national interests in the space domain.

Theme 2: Military space forces are an interdependent element of the Joint Force. Military space forces are the practitioners of military spacepower. Security, deterrence, and violent competition are the hallmarks of a war-fighting force. Military space forces are no different. They shape the security environment, deter aggression, and apply lethal and nonlethal force in space, from space, and through space. They perform these tasks as an interdependent element of the joint team.

Joint Publication 1 defines *joint interdependence* as "the purposeful reliance by one Service on another Service's capabilities to maximize complementary and reinforcing effects of both."³⁰ Joint interdependence implies that space operations are no longer an auxiliary adjunct to air, land, maritime, and cyberspace operations. Military spacepower is an obligatory component of modern Information Age warfare. Capabilities as fundamental as precision attack, maneuver warfare, strategic warning, and global power projection presuppose the Joint Force's ability to control and exploit the space domain. Without access to space capabilities, joint operations would devolve into the Industrial Age warfare of the early twentieth century, characterized by the mass concentration of force-on-force violence and indiscriminate destruction.³¹ Military spacepower doctrine must recognize this distinction and elevate terminology that reflects the indispensable role space plays in joint operations. For example, the doctrinal term *space force enhancement* connotes an incremental improvement in capability while *space support to operations* does not capture the true interdependencies between space and the war-

fighting forces in other domains. Such terms cast space as an auxiliary adjunct to joint operations. Instead, the term *global information mobility* should replace these legacy terms as a more accurate description of the vital interdependent effects capabilities like satellite communications and PNT provide to the Joint Force.

At the same time, joint interdependence implies that operations in the air, land, maritime, and cyberspace domains are critical to gaining and maintaining space superiority. Space systems consist of three segments: ground, link, and space. This makes military spacepower inherently multidomain and necessitates support from military forces in the other domains to secure space superiority. For example, maritime standoff strike capabilities can support space superiority by neutralizing adversary satellite command and control nodes. In pursuit of true joint interdependence, military spacepower doctrine must prepare space forces to operate side-by-side with war fighters in other domains in both supporting and supported roles. Thus, emphasizing joint interdependence reinforces a coequal identity with war fighters in the other domains.

Theme 3: Military spacepower demands a unique expertise. This third theme emphasizes that military spacepower is a unique form of military power. Because military operations in the space domain are distinct from operations in other domains, the successful application of military spacepower demands war fighters with an intuitive understanding of the domain. Referred to as *space mastery*, this intuition must encompass the entire space environment.³² In addition to the physics and engineering of space flight, space mastery also includes a predictive understanding of the interests and behaviors of civil, commercial, and foreign space actors. The unique nature of the space domain demands war fighters with space mastery who are deliberately developed in the conduct and application of military spacepower.

An intuitive understanding of the domain is an important component of a war-fighting culture. MCDP 1, *Warfighting*, pinpoints speed and focus as universal determinants of combat power.³³ Based on Col John Boyd's Observe, Orient, Decide, and Act (OODA) loop, under this formulation *speed* represents the rapidity of action while *focus* represents the convergence of effects on an objective.³⁴ Space domain intuition enhances the speed and focus of military spacepower by allowing space war fighters to observe, orient, and decide faster than their adversaries. Developing space war fighters with an intuitive understanding of the domain requires deliberate professional development over time. Air Force basic doctrine must recognize this imperative by formally acknowledging the distinctions between airpower expertise and military spacepower expertise.

Conclusion

The widespread acceptance of a new idea in an organization takes time. But the process always benefits from an authoritative formulation that defines the shape, structure, and implied values of the new idea. Publishing a new idea through formal organizational channels advances the permanence of a concept and provides a point of departure for future innovations.

Publishing an independent theory of military spacepower as formal Air Force basic doctrine is the first step toward ensuring military spacepower is broadly understood and accepted across the DAF. Doctrine is not culture. But by publishing and adhering to an authoritative theory of military spacepower, the Air Force can set the conditions for a space war-fighting culture to develop. Under the framework for military spacepower presented here, Air Force space forces are practitioners of an independent discipline of military power unique to the space domain. This purpose, in turn, shapes their identity as coequals with the other war fighters responsible for military power in the air, maritime, and land domains. With purpose and identity solidified, other initiatives aimed at cultivating a space war-fighting culture will take root and flourish. ★

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Notes

1. Oriana Pawlyk, "Outgoing SecAF Worries About Developing Service Culture at New Space Force," *Military.com*, 16 May 2019, <https://www.military.com/>.
2. Rumsfeld et al., *Commission to Assess United States National Security Space Management and Organization* (Washington DC: Central Intelligence Agency Printing and Photography Group, 2001), 42.
3. Trisha Schmalz, "Space Professional Development Program Readies Better Space Cadre," *Air Force Space Command*, 15 September 2006, <https://www.afspc.af.mil/>.
4. Gen John P. Jumper, "A Word from the Chief: Why 'Air and Space'?", *Air & Space Power Journal (ASPJ)* XVI, no. 3 (Fall 2002): 5, <https://www.airuniversity.af.edu/aspj/>.
5. TSgt Jennifer Thibault, "New Space Badge Wear Begins Today," *Air Force Space Command*, 1 November 2005, <https://archive.is/>.
6. Acting Secretary of the Air Force Matthew P. Donovan, "Unleashing the Power of Space: The Case for a Separate U.S. Space Force," *War on the Rocks*, 1 August 2019, <https://warontherocks.com/>.
7. Miller et al., *Space Cadre Personnel Review Report: Developing our Space Cadre for a Warfighting Domain*, 15 August 2018.

8. Peter L. Hays, *Struggling Towards Space Doctrine: U.S. Military Space Plans, Programs, and Perspectives During the Cold War*, thesis presented to the faculty of the Fletcher School of Law and Diplomacy, May 1994, 212.
9. *National Security Strategy of the United States of America*, December 2017, 27, <https://www.whitehouse.gov/>.
10. Office of the Press Secretary, The Office of the President of the United States, Space Policy Directive—4, “Establishment of the United States Space Force,” 19 February 2019.
11. Office of the Press Secretary, “Establishment of the United States Space Force.”
12. Andrew Neal, Mark A. Griffin, and Peter M. Hart, “The Impact of Organizational Climate on Safety Climate and Individual Behavior,” *Safety Science* 34, no. 1–3 (2000): 99–109.
13. Lt Col Casey Beard, *Transforming Technicians into Tacticians*, Air Force Public Affairs, 13 September 2019, <https://www.schriever.af.mil/>.
14. Edgar H. Schein with Peter Schein, *Organizational Culture and Leadership* (Hoboken, NJ: Wiley, 2017), 127.
15. United States Army Training and Doctrine Command, Army Doctrine Publication 1, *The Army*, July 2019, v.
16. Curtis E. LeMay Center for Doctrine Development and Education, Volume I, *Basic Doctrine*, 14 October 2011, <https://doctrine.af.mil/>.
17. Department of the Navy, Naval Doctrine Publication 1, *Naval Warfare*, March 2010.
18. United States Marine Corps, Marine Corps Doctrine Publication 1-0, *Marine Corps Operations*, 26 July 2017.
19. Gen Thomas D. White, “Air and Space are Indivisible,” *Air Force Magazine*, September 2008, <http://www.airforcemag.com/>.
20. Air Force Manual 1-2, *United States Air Force Basic Doctrine*, 1 December 1959, 6.
21. Air Force Manual 1-1, *USAF Basic Doctrine*, 1979 and Air Force Manual 1-6, *Military Space Doctrine*, 15 October 1982.
22. Department of the Air Force, *The Aerospace Force: Defending America in the 21st Century* (Washington, DC: Headquarters United States Air Force, 2000), 1.
23. Gen Jumper, “A Word from the Chief,” *ASPJ*, 5.
24. Air Force Doctrine Document 2-2, *Space Operations*, 27 November 2006.
25. Air Force Public Affairs, “Air Force Updates Doctrine Documents,” *Air Force News Service*, 16 November 2011, <https://www.af.mil/>.
26. Curtis E. LeMay Center for Doctrine Development and Education, Volume I, *Basic Doctrine*, 27 February 2015, 22, <https://www.dctrine.af.mil/>.
27. Donald Cox and Michael Stoiko, *Spacepower: What it Means to You* (Philadelphia, PA: John C. Winston Company, 1958).
28. David E. Lupton, *On Space Warfare: A Space Power Doctrine* (Maxwell AFB, AL: Air University Press [AUP], June 1988); Peter L. Hays et al., eds., *Spacepower for a New Millennium: Space and US National Security* (New York, NY: McGraw-Hill, 2000); Maj John E. Shaw and Brig Gen Simon P. Worden, *Whither Space Power? Forging a Strategy for the New Century* (Maxwell AFB, AL: AUP, 2002); James E. Oberg, *Space Power Theory* (Maxwell AFB, AL: AUP, 2002); M. V. Smith, *Ten Propositions Regarding Spacepower* (Maxwell AFB, AL: AUP, 2002); Everett C. Dolman, *Astropolitik* (New York, NY: Frank Cass Publishers, 2002); and John J. Klein, *Space Warfare: Strategy, Principles, and Policy* (New York, NY: Routledge, 2006).
29. Milan N. Vego, “On Naval Power,” *Joint Force Quarterly* 50, no. 3 (2008): 8.

30. Vego, "On Naval Power," I-2.
31. Casey Beard, *Information Control: Preserving the Advantage* (Maxwell AFB, AL: Air University, 2015), 43–60.
32. Beard, *Information Control: Preserving the Advantage* (Maxwell AFB, AL: Air University, 2015), 43–60 and; Miller et al., *Space Cadre Personnel Review Report*, 26.
33. Department of the Navy, Marine Corps Doctrine Publication 1, *Warfighting*, 4 April 2018, 2–19, <https://www.marines.mil/>.
34. Department of the Navy, Marine Corps Doctrine Publication 1, *Warfighting*.