



**DEVELOPING A FOUNDATIONAL
SPACEPOWER DOCTRINE: FOSTERING AN
INDEPENDENT SPACE-MINDED CULTURE
AND IDENTITY**

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The Space Force has taken a key step in establishing its doctrine, culture and identity by publishing the Spacepower Capstone Doctrine in August 2020. But specific choices yet to come that favor either space control or survivability will infuse the Space Force’s culture and identity and shape the tools the Space Force provides the nation for decades.

Introduction

The United States has a Space Force. Now what will the Space Force do? There are many ways to answer that question, from daily tasks to formally assigned missions. But nothing will be more important in shaping what the new service does to advance its efficacy than the Space Force’s identity, culture, and doctrine. Space Force leaders themselves acknowledge the centrality of these factors. In his foreword to the *Spacepower Capstone Publication* (SCP) released in August 2020, Chief of Space Operations General Jay Raymond noted that the doctrine represents the Space Force’s “first articulation of an independent theory of spacepower” and “answers why spacepower is vital for our Nation, how military spacepower is employed, who military space forces are, and what military space forces value.”¹ General Raymond’s foreword also notes:

Agility, innovation, and boldness have always been the touchstone traits of military space forces. Today, we must harness these traits to pioneer a new Service and a new professional body of knowledge. This capstone doctrine is a point-of-departure toward that goal, not a final adjudication. Given the nascent state of spacepower theory, this publication will inevitably evolve over time as it is applied, evaluated, and refined. Therefore, military space forces are encouraged to read, critique, debate, and improve upon the ideas that follow.”²

This chapter seeks to critique the SCP and offer suggestions for the next version by positioning the SCP within the broader evolution of thought about spacepower doctrine.

As the United States leverages space for military, commercial, and societal advantages and space becomes ever more democratized yet contested, everyone in the United States should care how the Space Force will defend this domain. How the Space Force sees itself and how it decides to fight will determine whether the Space Force delivers enduring strategic advantages, achieves goals the nation’s leaders seek for space, or even becomes a liability. Once military organizations are settled into their ways, senior political and military leaders can find their tools—no matter how polished and refined—do

not achieve the ends national leaders seek. The Space Force is currently establishing its identity, culture, and doctrine; these factors will be key in setting its priorities and explaining why it favors some missions over others. In essence, the next few years will be critical for all space forces and what they do for the country.

Defining Terms

To understand what the Space Force must build and how it will employ these systems, we must first define what we mean by doctrine, identity, and culture. Doctrine orients a military service and provides a foundation for further strategic and operational thought. Military doctrine is a formal set of beliefs that help to translate national security strategies and policies into specific military objectives, develop effective and efficient military strategies, and create the appropriate military organizations, systems, and operations for obtaining these objectives. In theory, doctrine could exist without or be drafted prior to an organization's creation, but in practice doctrine and organizations are almost always inextricably woven together. Historian I.B. Holley, Jr. emphasized these inherent links between doctrine and organizations in his concise definition of doctrine as “what is officially believed and taught about the best way to conduct military affairs.”³

Identity and *culture* are more amorphous terms, centered on the things that distinguish one group from another, how group members categorize themselves, the social behavior and values of a group, and the contributions and achievements of the group. Distinct military identities and cultures arise from operational and social factors including shared perceptions, concepts, values, and behavior. It can be difficult for formal processes to be the primary drivers in shaping military identity and culture; new military identities can form rather quickly but it can be a generation-long process to develop or change the culture of a military organization.

Doctrine—like strategy itself—can be thought of as theory. Good doctrine will perform the primary roles of any theory: description, explanation, and prediction. When the members of a military service see the world through that doctrine, they have answers to basic operational questions and the service has a stronger foundation for a distinct identity and culture.

Main Drivers for Space Doctrine

Creation of the independent Space Force was the catalyst for the SCP, but space doctrine has been ripe for new developments for at least a generation. When space forces were a part of the Air Force, they got caught up in the doctrine, identity, and culture of that organization, itself a relatively new military organization. Now that the Space Force is independent it must seize every opportunity to balance and prioritize in its own doctrine all the different tasks and units it has inherited.

Early airpower advocates promulgated a simple, clear, and strongly held mantra: airpower is *inherently offensive, manifestly strategic, and should, therefore, be organized independently*.⁴ These powerful ideas helped guide the United States toward creation of an independent Air Force in 1947 and drove Air Force decisions for decades. During most of the Cold War, the Air Force insisted that space and air formed a seamless operational domain which it defined as “aerospace,” a position opposed by the rest of DOD that saw distinct space and air domains.⁵

Under the seamless aerospace concept, for decades the Air Force tended to “force-fit” space doctrine into the mold of air doctrine and argued that the three major airpower characteristics of speed, range, and flexibility applied equally well to spacepower when, in fact, speed and range mean very different things in space than in the air and spacecraft are among the least flexible of all today's military systems.

As the Cold War was ending, the Air Force began thoughtfully addressing many of the problems with the aerospace concept and the development of spacepower doctrine. Several of these improved approaches build from Dennis Drew's doctrine-tree model—the idea that doctrine should grow out of the soil of history, develop a sturdy trunk of fundamental doctrine, branch out into doctrine for specific environments, and only then attempt to sprout the organizational doctrine

analogous to “leaves.” Drew’s doctrine tree metaphor provided a comprehensive way to critique the aerospace concept and the Air Force’s earliest space doctrine as an attempt to grow leaves on a nonexistent branch.

Comparing the Lupton and Rumbaugh Spacepower Doctrine Typologies

Finding the airpower mantra and the aerospace concept to be inappropriate for developing spacepower doctrine, space officers searched for a better foundation to advance spacepower thought. One of the most influential examinations of these concepts is the four-part typology developed by Air Force Lieutenant Colonel David E. Lupton in his 1988 book, *On Space Warfare*.⁶ He argued there were four schools on how the United States should use space: sanctuary, survivability, control, and high ground. The first two, sanctuary and survivability, emphasized space capabilities’ role in supporting terrestrial forces. The *sanctuary* school argued that the critical strategic utility of space systems in providing capabilities including nuclear command and control, missile warning, and national technical means of verification (NTM) for arms control should not be endangered by developing capabilities that raise the risk of conflict outside of the atmosphere. *Survivability* acknowledged greater military use of space—and even the threat to space forces—but emphasized that space forces were subordinate to the other, terrestrial military missions they supported. Lupton’s other two schools prioritized space forces. The third, the *control* school, held that space should be thought of like other military theaters of operation where the primary military objective is to gain control over the domain. “Control” implies an ability to maintain one’s freedom of action while also having the ability to deny freedom of action to adversaries. The fourth school—*high ground*—goes even farther, holding that space has the potential to be the decisive theater of combat operations. Reasoning by historical analogy, the high ground school posits that just as holding the high ground is often the decisive factor in a land battle or as airpower often prevails over land and sea forces, in the future, space forces will dominate terrestrial forces.

Russell Rumbaugh’s [2019 analysis on space doctrine schools of thought](#) saw six distinct schools compared to the four from 1988, each of which has a different vision of war and therefore what role space forces will play.⁷ Lupton’s *control* translated directly into the *space control first* school, though it amended the school to give it decisive effects through the same logic that other domains, like air superiority or command of the sea, have followed: *If you do not win this domain first, you will lose the war*. Lupton’s high ground school is captured in one variant of the *galactic battle fleet* school, though thirty years later, the promises of true terrestrial strike high-ground weapons remain technological dreams rather than operational realities. But this new taxonomy suggests another variant of Lupton’s high ground school, *enable global missile war*, which relies on strikes by terrestrially based, precision-guided missiles enabled by space-based sensors and command and control. Today there is really no equivalent to Lupton’s sanctuary school. With years of developments of space and four nations explicitly testing anti-satellite weapons, no one is seriously arguing space is not contested.⁸ The big difference between the 1988 and 2019 schools is the greater split of Lupton’s survivability school. The 2019 account posits three separate schools that stress the importance of space but still see it subordinate to other priorities: *Keep the plumbing running* emphasizes traditional terrestrial military forces; *frictionless intelligence* emphasizes strategic intelligence; and *nukes matter most* emphasizes the nuclear deterrence mission. All recognize the importance of space and rely on space forces but have unique priorities and demands on space forces.

Comparing and contrasting the two taxonomies highlights enduring challenges for Space Force’s doctrine and mission priorities. Table 1 puts the 1988 schools on the left-hand column and the 2019 schools on the right-hand column. Within those columns are the value space systems provide, the preferred system characteristics, and the missions each school expects the various space forces to conduct in conflict. So arrayed, the table shows that many of the characteristics being pursued for today’s spacecraft align with both Lupton’s survivability and control schools (highlighted in yellow). As described above, few argue for a sanctuary approach. And while many advocates for high ground remain, the technology remains unready, leaving the principal tension between control and survivability.

Table 1: What Various Schools of Thought Want from Space Forces

1988 Schools	Primary Value and Functions of Military Space Forces	Space System Characteristics and Employment Strategies	Conflict Mission of Space Forces	2019 Schools
Sanctuary	<ul style="list-style-type: none"> ◆ Enhance strategic stability ◆ Facilitate intelligence gathering 	<ul style="list-style-type: none"> ◆ Limited numbers ◆ Earth-focused sensors most important 	<ul style="list-style-type: none"> ◆ Limited ◆ Survive nuclear war 	Nukes Matter Most
Survivability	<ul style="list-style-type: none"> ◆ Enhance strategic stability ◆ Facilitate intelligence gathering ◆ Force enhancement 	<ul style="list-style-type: none"> ◆ Autonomous control ◆ Attack warning sensors ◆ Less vulnerable orbits ◆ Maneuver ◆ Space mission assurance <ul style="list-style-type: none"> ▶ Defensive operations ▶ Resilience <ul style="list-style-type: none"> – Disaggregation – Protection – Distribution – Proliferation – Diversification ▶ Deception ◆ Reconstitution ◆ On-orbit spares ◆ 5Ds: <ul style="list-style-type: none"> ▶ Deception ▶ Disruption ▶ Denial ▶ Degradation ▶ Destruction ◆ Bodyguards and convoys 	<ul style="list-style-type: none"> ◆ Force enhancement ◆ Degrade gracefully ◆ Fend off adversary attacks in order to preserve systems 	Frictionless Intelligence
				Keep the Plumbing Running
Control	Fight in space		<ul style="list-style-type: none"> ◆ Space domain awareness ◆ Space superiority <ul style="list-style-type: none"> ▶ Offensive counterspace ▶ Defensive counterspace 	Space Control First
High Ground	Target terrestrial forces	Space-based comms and sensors to track, AI-enabled C2, and target Earth-based missiles	<ul style="list-style-type: none"> ◆ Targeting ◆ Survive adversary attacks in order to preserve capability 	Enable Global Missile War
	Coerce terrestrial actors	Space-based Earth strike weapons	Decisive space-to-Earth strikes	Galactic Battle Fleet*

*Rumbaugh’s Galactic Battle Fleet also encompassed a subschool that was less concerned about Earth-strike weapons as free maneuver space-to-space weapons, whether directed at natural, adversarial, or extraterrestrial forces.

Analogizing from Doctrine for Other Domains

Another longstanding and potentially rich source of insights for space doctrine is building from at least decades, if not centuries, of the best military thought on military operations at sea or in the air. Seminal theorists who developed important strategic frameworks on military operations in these two domains include Alfred Thayer Mahan, Julian Corbett, Giulio Douhet, Billy Mitchell, and John Warden.⁹ Some of the key concepts that these theorists developed or applied to the air and sea domains are command of the sea, command of the air, shared sea lines of communication, land and sea interdependencies, choke points, harbor access, concentration and dispersal, and parallel attack.¹⁰ Several of these strategic concepts have been appropriated directly through analogy into various strands of embryonic space theory; others have been modified slightly, then applied. For example, Mahan's and Corbett's ideas about command of the sea being normally in dispute, shared sea lines of communications between adversaries, and choke points have been applied directly onto the space domain. General maritime and airpower concepts that have been modified to help provide starting points for thinking about nascent space doctrine also include harbor access, command of the air, and sea control.

As discussed in recent books by John Klein and Bleddyn Bowen, however, much of our current thinking about space doctrine may overemphasize the analogous use of British Royal and U.S. naval experience and the application of military power within a single domain.¹¹ Specifically, the use of Alfred Thayer Mahan's seapower strategy and seeking the "decisive battle" has shaped much of our current thinking about spacepower.¹² This is problematic because it has led to an offensive dominant approach to spacepower doctrine and a perceived first-mover advantage in the space domain.¹³ In contrast, Klein and Bowen advocate a more holistic and all-domain approach to space doctrine and strategy, building upon the works of past strategists such as Charles Callwell, Raoul Castex, B.H. Liddell-Hart, J.C. Wylie, and others. They believe space doctrine should include all instruments of national power and all-domain military operations in order to more accurately address the character of great power competition in space.¹⁴ This perspective on the development of space doctrine provides new considerations regarding the "cosmic coastline" of current space operations, emphasizes space's significant contributions in supporting both terrestrial conflict and economic prosperity, while also providing insights for future conflict that may occur solely within the space domain.

Improving the Next Spacepower Capstone Publication

The Space Force deserves credit for recognizing the importance of doctrine to the new service and for delivering the SCP less than eight months after it was established. The SCP is a wide-ranging document that provides strong support for the importance of space to the United States and for creation of the Space Force. Unfortunately, however, it has less specific guidance regarding how military spacepower should be employed. It is undoubtedly appropriate for a capstone publication to avoid tactical details about employment of spacepower, but the SCP does not provide clear and comprehensive criteria for why it chose to incorporate, reject, or ignore existing operational- and strategic-level space doctrine. This approach did not provide a very strong foundation for the doctrinal content in the SCP or establish much of the framework needed to build the next levels. In practice, this shortfall will make it more difficult for the various space forces to act on General Raymond's charge to apply, evaluate, and refine the SCP.

Future versions of the SCP should build much more explicitly from existing doctrine in Joint Publication 3-14, *Space Operations*, and the Air Force's Annex 3-14, *Counterspace Operations*, as well as from the Lupton and Rumbaugh conceptual typologies. This is not to suggest that the next SCP should simply accept everything from existing doctrine and conceptual typologies, but without clear and replicable criteria for evaluating the existing foundations, only limited progress can be made. In particular, future versions should provide specific citations that extend or reject dialogue with previous work, rather than providing a long list of previous spacepower-related materials at the end but without references to these materials throughout the text. In the next version of the SCP, the Space Force should also consider interdependencies and the comprehensive and holistic strategic contributions of space capabilities. Such an approach may help the Space Force avoid stovepiped thinking and problems like the limitations the aerospace concept placed on Air Force thinking about space doctrine.

Doctrine is particularly important in space because we fortunately lack any experience with actual conflict in space to date. Experience and trial and error, therefore, cannot help the Space Force select which systems and missions to favor. Indeed, the SCP is likely to remain an important part of the Space Force’s thinking and may play an outsized role in shaping the Space Force’s missions, priorities, and capabilities, particularly if space remains a warfighting domain without actual warfare.

How Culture and Identity Flow from Doctrine

The chosen doctrine will also be infused throughout the organization by the culture and identity it favors. Edgar Schein, author of *Organizational Culture and Leadership*,¹⁵ focuses on three “levels” of organizational culture, best visualized as a pyramid. The first, least substantive level is *observable artifacts*. Artifacts are tangible and visible to the outside community and include such things such as flags, emblems, uniforms, customs and courtesies, rituals and ceremonies, forms of address, jargon, songs, artwork, and myths and stories about the organization. Discussions on Space Force uniforms, rank, and its official song clearly belong in this level. The artifact level also includes architecture and technology, observed behavior, organizational processes, and structural elements such as charters, mission statements, and organizational charts. Although artifacts may be observable, that does not necessarily mean they are easily decipherable and meaningful to an outsider.

The first level is just the tip of the pyramid, however, and rests upon the second level, *espoused beliefs and values*. This level includes strategies, goals, philosophies, values, rules, embedded skills, habits of thinking, mental models, and shared meanings. The third, foundational level is *shared, underlying assumptions*, which are deeply embedded, taken-for-granted beliefs that are the essence of a culture but often difficult to perceive. Culture at this level, according to Schein, provides group members their basic sense of identity.

In a sense, doctrine has one foot in Schein’s second level of organizational culture, and one foot in the third. Doctrine is one of the foundations on which strategy is based so it is reasonable to judge that doctrine may be placed more deeply in the second level of the organizational culture pyramid than strategy. But Lupton also notes that doctrine includes influential, unofficial beliefs that come in many levels of abstraction, putting the other foot in *shared, underlying assumptions*, Schein’s third, taken-for-granted, foundational level of organizational culture.

In addition, Schein’s three organizational culture levels align closely with Drew’s doctrine tree metaphor discussed above. The Space Force’s organizational culture should flow up from Drew’s fundamental principles at the root of the tree, be informed by the beliefs found in environmental doctrine at the second cultural organizational level, and be particularized as appropriate for individual unit culture. This will help the Space Force develop an organizational culture and identity that dovetail with its doctrine, avoid overemphasis on less substantive observable artifacts, and avoid trying to grow leaves on a nonexistent branch.

Conclusion

While a very important step, a document alone is not enough because doctrine must be assimilated into how the members of the Space Force see their main missions and priorities. Doctrine must become part of their culture to help create a common and distinct identity. As a new organization, the Space Force faces several enduring challenges in building this doctrine, identity, and culture, not least because it has so many disparate responsibilities so critical to the nation. As a new organization, the Space Force will grow from its roots and incubate a distinct culture and identity. The doctrine it pursues will be one of the most important drivers of culture and identity—and once formed, they will shape every choice made within the Space Force. Space is ever more critical to the United States. Not just the U.S. military but all of U.S. society relies on space, which means all our nation’s leaders must care how space is used militarily and defended. The Space Force was created for these purposes. The *Spacepower Capstone Publication*, along with the new service’s culture and identity, will be primary drivers in forging the spacepower capabilities available to U.S. presidents and will answer basic questions about what the Space Force does.

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