

The Space Fight: An Examination of the Space Warfighting Domain and What It Takes to Win!

By Mr. Michael Forbis

30 July 2018

2018 General Bernard A. Schriever Memorial Essay Contest

“Honorable Mention”

Distribution Statement A: Approved for public release; distribution is unlimited.

The United States faces a significant challenge with emerging foreign powers developing and improving their own space capabilities, and these foreign powers pose an increased threat to U.S. dominance in the space environment. Also, these same foreign powers realize the joint warfighting advantage the U.S. gains from space capabilities, and they are aggressively seeking to decrease U.S. joint warfighting advantages from these space capabilities. Consequently, the space environment is evolving more into a space warfighting domain where growing competition exists with the United States, and the space warfighting domain is becoming more critical towards joint warfighting.

This challenge begs the following question: “What mix of strategies, policies and systems are required to strengthen U.S. deterrence in space and to dissuade adversaries from extending conflict to this domain?” In other words, what does it take for the United States to win the “Space Fight?” The United States will win the “Space Fight” through improved space lethality, better space warfighting domain integration with other domains, and a more balanced view of space warfare.

SPACE LETHALITY

In the 2018 National Defense Strategy (NDS), there are three lines of effort, and the first one is “Build a More Lethal Force.” The NDS states “the surest way to prevent war is to be prepared to win one,” and this core concept is the basis of successful strategic deterrence. Furthermore, force development “requires a competitive approach” to rebuild “warfighting readiness and field a lethal force.”¹ This line of effort is the most comprehensive within the NDS, and it is perhaps the most important. It applies to all aspects of joint warfighting, and it is very relevant to the space warfighting domain. For this reason, it is critical to describe what “space lethality” looks like for the space warfighting domain.

The idea of “space lethality” is a new concept, yet it already exists to a certain extent. By examining the concept of “space control,” the idea of “space lethality” easily originates. “Space control” is the “conduct of space operations to ensure freedom of action in space for the U.S. and its allies,” and the purpose of “space control” is to “achieve space superiority.”² There is both defensive space control (DSC) and offensive space control (OSC). OSC consists of offensive operations conducted to achieve five types of effects against spaces systems or services. These five effects are deceive, disrupt, deny, degrade, and destroy (or D5 effects).³

- Deceive. “Measures designed to mislead an adversary by manipulation, distortion, or falsification of evidence or information into a system to induce the adversary to react in a manner prejudicial to their interests.”
- Disrupt. “Measures designed to *temporarily impair* an adversary’s use or access of a system for a period (of time), usually without physical damage to the affected system.”
- Deny. “Measures designed to *temporarily eliminate* an adversary’s use, access, or operation of a system for a period (of time), usually without physical damage to the affected system.”
- Degrade. “Measures designed to *permanently impair* (either partially or totally) the adversary’s use of a system, usually with some physical damage to the affected system.
- Destroy. “Measures designed to *permanently eliminate* the adversary’s use of a system, usually with physical damage to the affected system.”

By simple examination of these D5 definitions, there are two key patterns. The first pattern is the increase of temporary to permanent effects, and the second pattern is the general increase in physical damage. These two patterns form the overall basis of “increasing space lethality” across the D5 effects spectrum as depicted in figure 1.

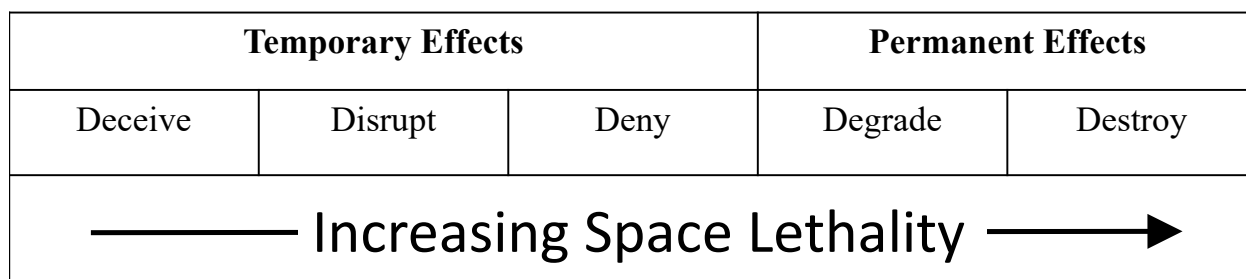


Figure 1: Space Lethality

The idea of “space lethality” is critical to winning, and there are several approaches to ensure its existence in the space warfighting domain. First, the requirements process and acquisition of space weapon systems need to incorporate “space lethality” as a key performance parameter (KPP). Second, the development of a space warfighting concept of operations must include “space lethality” as a core component to achieving success. Third, “space lethality” must exist as an essential task within the commander’s intent of the Joint Force Space Component Command (JFSCC). Finally, foreign powers must recognize and respect U.S. “space lethality,” and strategic communications can achieve this message. These approaches ensure “space lethality” improves friendly forces’ space control and space superiority. Most importantly, these approaches to “space lethality” improve the overall U.S. space deterrence with foreign powers. Clearly, “space lethality” is a critical piece of the overall “Space Fight.”

SPACE WARFIGHTING DOMAIN INTEGRATION

In December 2017, the President signed the National Security Strategy (NSS). In particular, the NSS declares the U.S. will maintain “freedom of action in space” and “freedom to operate in space.” In addition, the President states “any harmful interference with or an attack upon critical components of our space architecture that directly affects this vital U.S. interest will be met with a deliberate response at a time, place, manner and domain of our choosing.”⁴ The

last portion of this statement is “domain of our choosing,” and it implies the space warfighting domain requires a close integrated relationship with all warfighting domains such as land, maritime, air, and cyberspace. The integration of multiple domains implies the actions in one domain impacts the actions in another domain, and thus, all joint warfighting domains are tightly coupled with each other.

On 4 November 2016, the Department of Defense (DoD) published an updated Space Policy, and one core purpose of this document is to “integrate space capabilities.”⁵ More specifically, DoD will ensure the “integration of space-based capabilities into operational plans,” and “the space force structure will integrate space activities with those from other operational domains to support deterrence.”⁶ On 10 March 2017, the Air Force Chief of Staff published his third focus area called “Enhancing Multi-domain Command and Control...Tying It All Together,” and he emphasizes the Air Force must “dominate the air, space, and cyber domains today.”⁷ In addition, the Air Force “must integrate (its) advantages across these domains in new and dramatically effective ways.”⁸ The overall strategic message is the space warfighting domain requires a close and better integration with all other warfighting domains to create a strong and lethal joint warfighting approach.

Given the strategic need and mandate to integrate the space warfighting domain with the other warfighting domains, it is critical to understand the basic relationship of the warfighting domains with each other. Figure 2 provides a general crosswalk comparison and contrast between the five warfighting domains, and this general crosswalk helps to understand the basic relationships between the warfighting domains.⁹

<u>Summary:</u> This matrix provides a broad comparison / contrast overview between the five domains. Not all inclusive.		Warfighting Domains				
		Land	Maritime	Air	Space	Cyberspace
Characteristics	History: Time & Maturity	First and oldest domain. Longest history to capture lessons learned	Second domain. Sufficient history to capture lessons learned	Third domain. Young history to capture lessons learned	Fourth domain. Very little history to capture lessons learned	Last domain, but grew from Informational Instrument of National Power (DIME)
	Physical Nature (DoD Dictionary Term)	The area of the Earth's surface ending at the high water mark and overlapping with the maritime domain in the landward segment of the littorals.	The oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals.	The atmosphere, beginning at the Earth's surface, extending to the altitude where its effects upon operations become negligible.	The environment corresponding to the space domain... that encompasses the earth's ionosphere and magnetosphere, interplanetary space, and the solar atmosphere	A global domain within the information environment.... Not a physical domain. Man-made
	Level of Human Presence & Risk to Human Life	Contains the highest level of human presence (combatant & civilian). Poses highest risk to human life as a war domain / environment.	Contains perhaps 2nd level of human presence. Not a natural human environment. Can pose a high risk to human life as a war domain / environment.	Contains perhaps 3rd level of human presence. Not a natural human environment. Can pose a high risk to human life as a war domain / environment.	Contains practically no level of human presence. Not a natural human environment. Unknown level of direct risk to human life as a war domain / environment.	No human presence possible. No direct risk exists to human life as a war domain / environment.
	Lead Element Role vs. Supporting Element Role	Serves in a lead element role a majority of the time. Some limited supporting element roles to other domains.	Serves in a lead element role a majority of the time. Some limited supporting element roles to other domains.	Serves in a lead element role some of the time. In many instances, serves in a supporting element role to land / maritime domains. Some limited supporting element roles to space / cyberspace domains.	Serves in a supporting element role a majority of the time to other domains. No historic lead element role, lead role concepts emerging.	Serves in a supporting element role a majority of the time to other domains. No historic lead element role, lead role concepts emerging.

Figure 2: Warfighting Domains Crosswalk

This crosswalk highlights several aspects of the space warfighting domain in relation to the other warfighting domains. First, the space domain lacks history and doctrine because it is still growing to mature. Second, the space domain primarily serves in a supporting element role to the land, maritime, and air domains. For this reason, the overall role of space capabilities in joint warfighting will likely continue to be heavily dependent on the lead element roles provided from the other domains. However, the increase in threats in the space domain increases the likelihood of space taking on a limited lead element role for certain future conflicts. Finally, space contains no practical human presence as a warfighting domain, and the level of direct risk to human life is unknown. In the land, maritime, and air warfighting domains, the direct risk to human life is a critical concern when executing a war plan, and it is a key concern in a commander's decision cycle. Overall, the space warfighting domain primarily serves as an enabler to the other warfighting domains, and its growing importance to the other domains requires a better integration with them.

The integration of all warfighting domains into joint warfighting is a significant challenge, and a common place to integrate the warfighting domains is within a regional operations plan (OPLAN) developed by a Geographic Combatant Command (GCC). Typically, a regional OPLAN defines and leverages phases to synchronize and integrate operations from all warfighting domains. Figure 3 depicts a joint phasing model that may be used in a regional OPLAN by a GCC.¹⁰ In this notional example, the “level of military effort” or violence increases from phase 1 to phase 3 for the land, maritime, and air domains in a regional conflict. “Space lethality” likely increases in the same manner. Even though space capabilities are a global enabler, the increase of “space lethality” is strongly coupled to actions in a regional conflict, and the joint phasing model for a regional conflict helps to describe this relationship.

Notional Operation Plan Phases versus Level of Military Effort

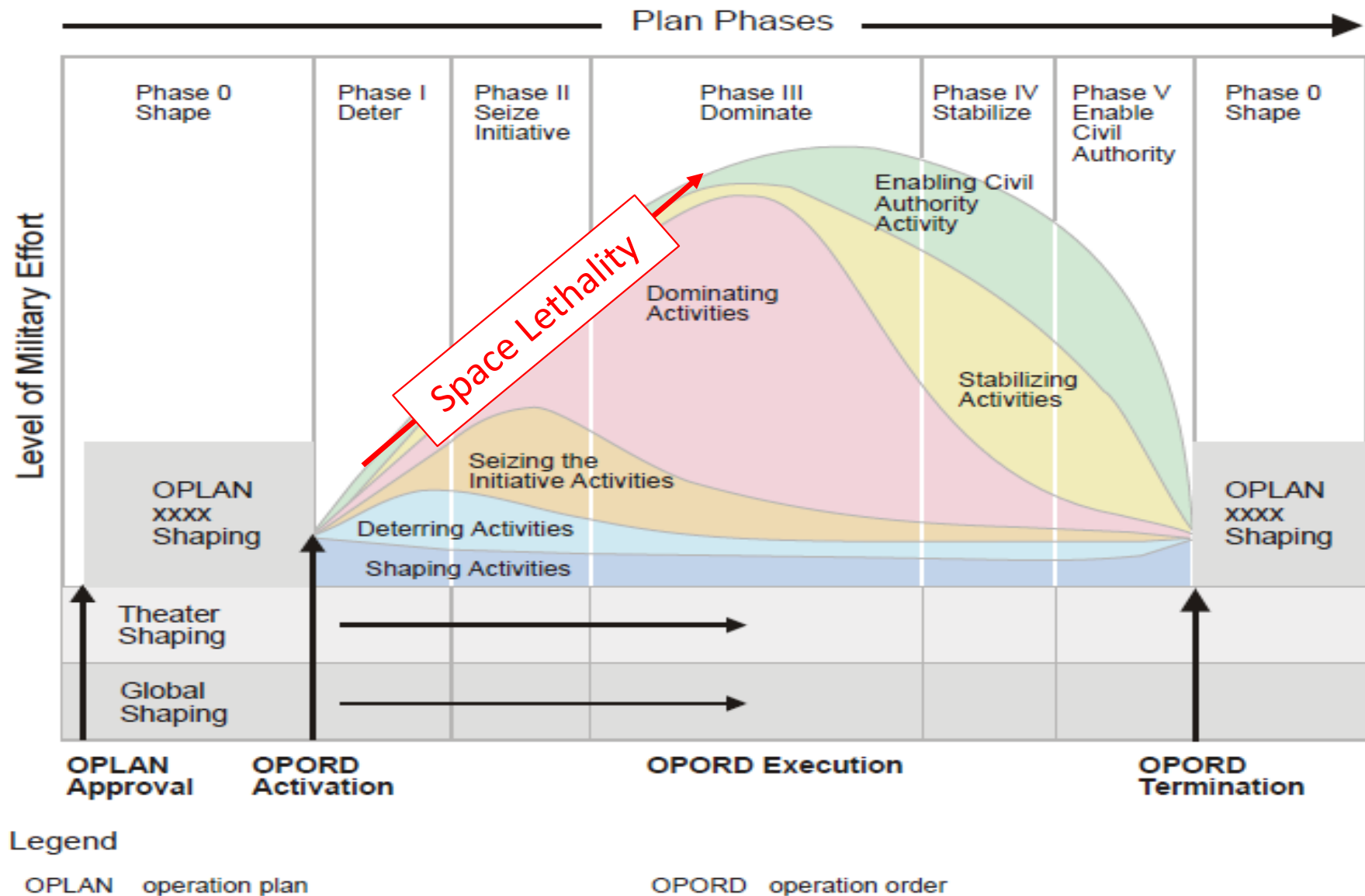


Figure 3: Joint Phasing Model

In general, GCCs such as Pacific Command (PACOM) and European Command (EUCOM) develop regional OPLANs for a potential regional conflict, and they integrate all the warfighting domains. As a Functional Combatant Command (FCC), Strategic Command (STRATCOM) provides the space capability enablers to the GCC for its regional OPLAN, and STRATCOM depends on JFSCC very significantly to provide these space capability enablers such as satellite communications (SATCOM) and positioning, navigation, and timing (PNT). JFSCC can better integrate the space warfighting domain with the other warfighting domains by understanding GCC OPLANs through joint training, exercises, warfighting analysis, and doctrine. Throughout multiple aspects of the joint force, the integration of all warfighting domains is a standard practice.

BALANCED VIEW OF SPACE WARFARE

In recent history, military professionals tend to fall into one of three intellectual traditions that make up the nature of warfare, and these three traditions are Guardians, Heroes, and Managers.¹¹ Guardians view war as both an art and science, and the art is largely the application of the science.¹² In other words, Guardians seek to leverage technology in the application of war. As a strong contrast to Guardians, Heroes emphasize the human element in warfare, and they define warfare by personal intangibles such as military genius and courage. Heroes view war simply “as armed violence directed toward the achievement of an end,” and war is an art that is not susceptible to a “fixed formula.”¹³ Finally, Managers view war as the “logical outgrowth of political” aims, and war requires the entire mobilization of the nation.¹⁴ Managers are scornful of the “narrow technicism of the Guardians and romanticism of the Heroes.”¹⁵

Before it became a contested environment, there was no need to view space as a warfighting domain, and the only real view of space involved the development of technology for space systems launched into orbit. As space became and continues to grow into a warfighting domain, military professionals within the space community viewed the nature of space warfare very similar to Guardians. This dominant view makes sense because the application of science and technology is at the origin of space warfare, yet this does not have to be the only view of space warfare.

As the view of space warfare evolves and the integration of the space warfighting domain increases with the other warfighting domains, a more balanced view of space warfare becomes necessary. Figure 4 depicts the current view of space warfare, and there are multiple directions where this view may develop in the future. The intersection involving Heroes and Guardians brings a more human element and includes a more personal approach towards space warfare. The intersection involving Guardians and Managers ensures a more broad approach towards space warfare. Finally, the intersection involving all three intellectual traditions ensures a more comprehensive approach towards space warfare. In any of these directions, military space professionals acquire a more balanced view of space warfare.

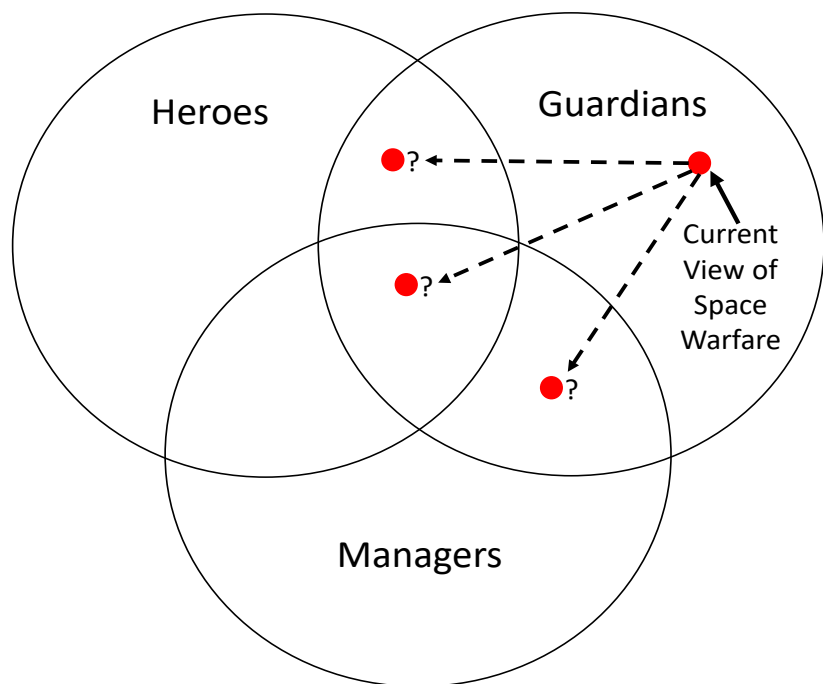


Figure 4: Intellectual Traditions on the Nature of War

CONCLUSION

There are several elements that enable the United States to win the “Space Fight,” and these areas are critical to the overall space warfighting domain. Through improved space lethality, the United States establishes better “space control” in order to gain and maintain “space superiority” against foreign powers seeking to overcome U.S. dominance in the space domain. With better integration with other warfighting domains, the space warfighting domain demonstrates increased relevance in a regional conflict and provides a substantial contribution towards victory in a conventional operation. In a more balanced view of space warfare, military space professionals expand their thinking beyond the technology used in the space warfighting domain, and the current culture of the space community evolves and improves. Space lethality, space warfighting domain integration, and a balanced view of space warfare are critical elements to the “Space Fight,” and these elements elevate the space warfighting domain to the same level of importance as the other warfighting domains.

ENDNOTES

¹ *Summary of the 2018 National Defense Strategy (NDS) of the United States of America: Sharpening the American Military's Competitive Edge*, January 2018, page 5.

² Joint Publication (JP) 3-14, *Space Operations*, 10 April 2018, page II-2.

³ JP 3-14, page II-2.

⁴ *National Security Strategy (NSS) of the United States of America*, December 2017, page 31.

⁵ Department of Defense (DoD) Directive 3100.10, *Space Policy*, 4 November 2016, page 1.

⁶ *Space Policy*, pages 2-3

⁷ Goldfein, General Dave, Chief Staff of the Air Force. Letter to all personnel, 10 March 2017, *Enhancing Multi-domain Command and Control...Tying It All Together*, page 1.

⁸ Goldfein, page 1.

⁹ *Department of Defense (DoD) Dictionary of Military and Associated Terms*, April 2018. Note: each of the five warfighting domains are defined from this dictionary as in row 2 of the crosswalk matrix.

¹⁰ Joint Publication (JP) 5-0, *Joint Operations Planning*, 11 August 2011 (outdated) explains the joint phasing model on pages III-39 to III-43. However, it is critical to note the current JP 5-0, *Joint Planning*, 17 June 2017 removed the standard joint phasing model, and combatant commands can determine their own phases for a respective contingency plan. In many cases, this legacy joint phasing model will still be referenced and applied.

¹¹ Linn, Brian McAllister, *The Echo of Battle: The Army's Way of War*, (Cambridge, MA: Harvard University Press, 2007), page 5.

¹² Linn, *The Echo of Battle*, page 6.

¹³ Linn, *The Echo of Battle*, page 6.

¹⁴ Linn, *The Echo of Battle*, page 7.

¹⁵ Linn, *The Echo of Battle*, page 9.