

SPACE IS A WARFIGHTING DOMAIN

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The Space Capstone Publication opens with the declaration that space is a warfighting domain. This assertion has tremendous repercussions for force structure, budget decisions, public and international perceptions, and, perhaps most significantly, for the culture of the newest military service. The capstone publication sets a tone for military space responsibility that is long overdue.

Eight months after it was established, the nascent US Space Force published its initial doctrine. The Space Capstone Publication was the result of an intense study of who and what the force would become and the principles that lay behind that vision.¹ It opens with the unequivocal statement that space is a warfighting domain. This assertion has tremendous repercussions for force structure, budget decisions, public and international perceptions, and, perhaps most significantly, for the culture of the newest military service. The capstone publication sets a tone for military space responsibility that is long overdue.

In the 1980s and 1990s, I was a senior intelligence analyst at the original US Space Command. I assessed the space threat from the Soviet Union, then Russia, and China. The command would routinely conduct wargames, and within a few hours of a simulated crisis, the so-called red team often negated most of the blue team's on-orbit capabilities rendering the command strategically blind and deaf. This would prompt a heightened defense readiness condition (DEFCON) in anticipation of an invasion of Western Europe and a nuclear attack on American soil.

The consistent response from the blue team was to hit back hard from the air and sea, while ground forces braced to repel the coming assault. Accordingly, I was assigned to a team that developed and maintained a space-priority target list including launch sites, ground and tracking stations, and production facilities that the Air Force and Navy could be called upon to strike. The thinking was, we may lose the war *in* space, but at least we could try and deny the Russians access *to* space. It was a very dissatisfying position, especially since our ability to project power deep behind enemy lines was contingent upon continuing robust support from space.

1. John W. Raymond, *Spacepower: Doctrine for Space Forces*, Space Capstone Publication (Washington, DC: US Space Force, June 2020), <https://www.spaceforce.mil/>.

In 1991, Operation Desert Storm, which Sir Arthur C. Clarke dubbed the first space war, cemented the post-Vietnam revitalization of the American military, demonstrating the value space support provided and the tremendous potential of integrating space support in every aspect of military operations. By 2003, in Operation Iraqi Freedom, space support was a universally acknowledged force multiplier.

In this conflict, space assets provided long-range communications including operating remotely piloted vehicles anywhere in the world from bases in the United States. Space assets also provided navigation support, especially valuable in a featureless desert and for precise targeting, but were most lauded by coalition forces for allowing previously unimaginable battlespace coordination known as blue-force tracking. Precise weather and terrain condition data and unprecedented continuous real-time reconnaissance, surveillance, intelligence, and early warning support were also notable advantages provided by space assets.

At about the same time, Air Force and civilian government representatives were admonishing the services for becoming over-reliant on space support—support that could not be guaranteed in a future conflict. Despite repeated and consistent warnings, the nation's unwillingness to defend space had not changed. In a war with a determined and tech-savvy opponent, and more so with a peer competitor, ubiquitous jamming, spoofing, lasing, and directed-energy strikes, and increasingly sophisticated ground-to-space kinetic antisatellite targeting was inevitable. Space support was too fragile to rely upon. The services, they insisted, had to ensure back-up capability to continue the fight as effectively without space as they had become used to fighting with it.

This stance was short-sighted at best and promised disastrous defeat at worst. Space support was presented as a luxury—nice to have but not a requirement. The message received by the other services was if they were on their own to ensure fully redundant warfighting effectiveness without it, why was space needed at all? With limited budgets and resources, what was the advantage in having both?

In reality, space provides a powerful asymmetric advantage in the modern battlespace. Twenty years of training and wargaming to operate without space confirms that when space support is shut off, US military operations grind to a halt. Spacepower is not an extravagance. It makes America and its Ally and partner militaries leaner, faster, and more precisely deadly. To operate effectively without space, the US military would have to revert to a Vietnam-era force structure: bloated, slower, and vastly more accepting of casualties and collateral damage. Spacepower may be the foundation of America's twenty-first century way of war, but the official line has been: don't count on it.

The first order of Space Force business was to reject the mindset that loss of space support in a conflict is a given, and that complete loss should be expected. No doubt space will be targeted and degraded in a future conflict. So too will every other form of military support. Not every aircraft will get through, nor every platoon or ship. The response—the same as that from the other services—was that you may not get every-

thing you want, but now the Space Force would battle for every shred of capability throughout the spectrum of conflict.

By declaring space a warfighting domain, the US Space Force accepted the responsibility that ensuring access to and support from space, and denying space to an adversary when required, would be Job One.

Differentiating Military Spacepower

Spacepower is the totality of a state's space research, resources, production and trade, infrastructure, and innovation contributing to national security and economic well-being. By declaring space a warfighting domain, military spacepower is recognized as a *subset* of the whole while highlighting the roles and functions expected of a dedicated military service. These functions include the martial capacity of the state to deter, protect, and defend against threats to all the nation's space capabilities, and to use those capabilities to support military and military-related operations in other domains.

A warfighting domain is an abstract construct that allows for critical analyses of those activities that properly belong to the military, separating them from civil, commercial, and international activities that are tightly connected. The point is not to declare that space is only for warfighting, that war in space is inevitable, or that spacepower is exclusive to the military. Such a declaration, instead, functions to clarify and delineate relationships.

Unlike the other forms of military domain power, spacepower suffers from a lack of useful terminology to distinguish it from more encompassing descriptions. Landpower is easy enough to contemplate as the missions and capabilities of the Army without misconstruing it as the entirety of the military-industrial-scientific complex. Seapower is relatively uncontroversial when it relates to the roles and missions of the Navy and is separated out from the broader notion of a nation's maritime power. Airpower has an equivalent concept in which the term aviation covers the totality of the nation's air-related capacities and allows for the roles and missions of the Air Force to be clearly stated in peace and conflict. Spacepower has not yet found its maritime/aviation terminology equivalent, and so the declaration of space as a warfighting domain must suffice for now.

Military spacepower is but one aspect of national spacepower. A great strength for America, for example, is its rapidly growing commercial space sector. Continued growth of this sector depends upon the delineation of the roles and functions of commercial space and an understanding of its relationship to other elements of national spacepower. In peacetime preparation for war, US Space Force will encourage commercial space development with military and dual-use potential primarily through service and procurement contracts.

As needed, the US government will augment military capacity with existing commercial assets through leases and other shared-use agreements. In extreme cases, the state may authorize temporary nationalization of civil and commercial capability similar to the historic use of the merchant marine as an augmenting force for the Navy. The Space Force will need to conduct contingency planning for all these scenarios.

Civil spacepower comprises space activities carried out by governments for basic scientific research, space exploration—robotic and human—and space programs that often have military and commercial significance but are not dedicated to military operations or not deemed profitable enough for commercial enterprise to take them on independently. These activities include space capabilities developed primarily for political or diplomatic influence, such as the 1960's moon race and the current International Space Station, and for projects that amount to essential space infrastructure such as launch facilities, ground support stations, space traffic management capabilities, global weather prediction, and back-up communications systems.

Civil spacepower also encompasses purely military-funded and maintained systems such as the Air Force's global positioning satellite (GPS) network that has become the indispensable underpinning of twenty-first-century international trade, production, and finance. Like the interstate highway system, rural electrification, and now expanding broadband access to underserved areas, civil, commercial, and military spacepower need to be recognized as foundational public services that enable and expand commercial, scientific, and military spacepower development.

Military spacepower is tightly linked with civil and commercial space. It can be studied exclusively in theory, as is attempted here, to clarify and explain proper relationships and hierarchies without the clutter and messiness of reality.

For example, as civil and commercial development expands into space, the military—the only legally recognized wielder of violence in international, nonsovereign, or commons areas—will be called upon to provide essential protective services. These services include search and rescue, debris and other obstacle removal, mitigation of international crime such as physical and electronic piracy and illicit trafficking, and numerous additional activities associated with making civil and commercial activities in space safe and reliable. This has been the pattern in the open oceans and the air-space above them and for ungoverned or nonsovereign territory such as the early American West or Antarctica today. In a phrase, flag follows commerce.

Defining Warfighting Domains

A warfighting domain is an organizational construct. It comprises an area of responsibility with a unique operational environment requiring specialized tactics, equipment, and structure. A warfighting domain, therefore, demands a different way of thinking within the broader context of military strategy. It requires specialized knowledge and training, unique tactics and doctrine, a distinct operational perspective, and a dedicated cadre of military professionals to advocate for and maximize combat power within and from the domain.

How the domain is defined determines the organizational construct of a state's military forces. An optimal definition eliminates organizational overlap and maximizes service interoperability through specialization—the key to making the whole more than the sum of its parts and the essence of Joint warfare.

The most common means of defining domains, however, exacerbate overlap and interoperability tensions. The first of these is simply separation by operational medium.

Land, sea, air, and space have distinct physical characteristics that can be summarized as solid, liquid, gas, and vacuum, respectively.

Overlap problems ensue when operating in or across domain boundaries. For example, who should be in overall command of a Joint force that operates in and from all mediums and across several component commands? Who should have command authority for—much less deconflict—a ballistic missile launched from a submarine that passes through the air, then space, air again, and impacts on land? Should there be a sequence of hand-offs, and if so, under what conditions?

More confusion results when service responsibility is determined by the operational platform used to access the domain. It seems simple enough. Aircraft should belong to the Air Force, seacraft to the Navy, spacecraft to the Space Force, and weaponry that moves across the ground to the Army. Call this the flies, floats, orbits, and walks differentiation.

Especially for aircraft, the problem is compounded. Should all forms of powered flight be considered airpower and thus the purview of the Air Force? Today the Air Force claims authority over fixed-wing aircraft, except for naval aircraft and helicopters (though it has helicopters), and the Army has a few airplanes. Since all services require land bases to support their operations, seaports, airports, and spaceports are all on land. This requires them to have wheeled and tracked vehicles as well as ground troops sufficient to protect the base.

When and under what circumstances should the Army send forces to augment them, and if so, which service should control them while defending the base from a concerted ground attack? Should an amphibious assault vehicle carrying soldiers belong to the Navy while at sea but be controlled by the land component when it reaches shore and rolls into battle? With these definitions, it is small wonder interservice rivalry is an art form.

An alternative domain discriminator that leads to an efficient and effective organizational structure ensues when warfighting domains are defined by power and purpose. The purpose of seapower, for example, is to ensure access to the sea for any who would do so for peaceful purpose and in conflict to deny that access to the opposition. The purpose of airpower is similarly to ensure access to the air and when called upon, deny that access to opposing forces. The purpose of landpower is to take and hold territory, essentially to ensure friendly access and deny opposing access when needed. Accordingly, the purpose of military spacepower should be to ensure access to space for all in peace and deny that access to opposing forces in conflict and war.

Achievement of guaranteed access to a warfighting domain and denial of that access to opponents is command of the domain. Capacity for command is the optimum military posture. Critically, if the assigned armed forces cannot gain command, they should still be prepared to contest access to the domain by opposition forces. Because the purpose is to deny access, contestation is expected from both within and from outside the domain. In order to command and contest the domain, the assigned service must maintain the ability to fight to, in, and from the domain.

Command does not have to be universal in space, time, or supremacy. Command can be general or local, permanent or temporary, and scaled from limited (contested) to total (uncontested). It is achieved when the military has the capacity to access the domain and provide effects from that domain with minimal or acceptable interference. Unquestionably, one cannot generate effects from the domain if one cannot operate in the domain. Thus a domain's purpose is not defined by what one does once access is achieved. It is not the purpose of the Air Force to support the fight on the ground or sea by aerial bombardment any more than it is the purpose of the Army to conduct nation-building operations. These are effects of achieving command.

When an aircraft bombs a factory, it is not conducting economic warfare, though it certainly has economic effects. It is exercising airpower. It is inappropriate to refer to bombing, shelling, or destroying a school as educational warfare or to call attacking a temple religious warfare. *The key point in these examples is that access and command is the purpose of domain power.* The effects that can be generated due to that access, from humanitarian aid to combat in, from, and through the domain are potentially infinite, limited only by imagination.

Defining a warfighting domain by purpose significantly reduces organizational conflicts and maximizes all-domain military effectiveness. First, whatever service is responsible for a warfighting domain should not be limited in acquiring the means (platforms) necessary to gain control of that domain and to deny access to it from other domains. This includes the ability to contest access to adjacent domains to prevent the opponent from generating unopposed effects from those domains.

Moreover, the services should be able to equip themselves with appropriate tools and weaponry for these purposes. The US Army, not the Navy, maintains coastal artillery, for example, because the purpose is not to command the sea but to prevent opposing navies from attacking the shore and supporting ground operations including amphibious assaults. Likewise, the Army maintains air defense capabilities not for the purpose of commanding the air (though it may help in that regard), but for denying (contesting) the enemy's ability to operate freely above it. No matter how thorough the ground-to-air contestation, it is possible, even likely, that the enemy is able to contest that same airspace. In this case, neither side has command; it is mutually contested.

This brings up a critical and extremely useful corollary to the logic of defining domains by purpose. A warfighting domain cannot be commanded from an adjacent domain, it can only be contested. The service assigned to the domain must be able to operate on (land and sea) or in (air and space) the domain to gain command—the animating purpose of domain warfare. Thus ground command can only be achieved with boots on the ground. Comparative adages might be stated as sea command is only possible with oars in the water, air command with wings in the air, and space command with satellites in orbit.

To highlight the corollary, airpower could in theory scour the ground of all opposition—bomb it flat, perhaps. *From* the air, though, one cannot do anything with the ground. Aircraft cannot rebuild structures, maintain roads, or farm crops.

Airpower may deliver workers and supplies to support those efforts but cannot by itself command it.

Another example might be suspicion of human trafficking on the high seas. Aircraft can intercept the boat, monitor it, and even sink it. But unless it can operate on the ocean, board the ship, inspect it, remove the victims, transport them to a safe haven, take those responsible into custody, seize the ship for evidence or reparations, and get it to port, airpower does not have sea command of that location at that time. The ability to fight *in* the domain, and *from* the domain to support the fight in other domains, should be the guiding principle of domain-centric definitions. Military spacepower, as portrayed in the context of a warfighting domain, must be perceived in precisely the same way.

Purpose obviates the petty squabbles highlighted above associated with medium- or platform-based definitions. If a capability is needed to command the domain and prevent others from attacking into it, then procure it. The Army should be able to determine what level of dedicated combat support aircraft it needs to take and hold territory and, if the Air Force cannot gain command of the air above it, to contest the air domain.

The Air Force needs ground-attack aircraft to remove obstacles to air operations such as radars, surface-to-air missiles, and enemy airfields and can support the fight on the ground with those same aircraft once command is achieved. The Navy should have sea- and land-based aircraft to efficiently support command of the sea and to assist in contestation of land adjacent to and the skies above the sea.

In the same way, the Space Force should have the weapons and resources it needs to fight in, to, and from space. It should not rely on other services to fight for it, because command of space will always be secondary to command of their primary domains, as it should be. Only with command of their own domains can the other services then contest the space domain. Equally important, the ability to operate in the domain ensures assets and capabilities located there can support other domains. With the ability to operate in space, the Space Force would be the best positioned to deter and defend against hostile action in space and, accordingly, provide effects from space.

Understanding warfighting domains as bounded by purpose provides an additional efficiency. Assignment of operational control of a Joint or combined mission is determined by identifying the primary supported service. A campaign in which ground troops are expected to take and hold territory, supported by sea, air, and space forces, should be under the overall command of the Army.

If command of the sea is required and naval assets are either the primary or sole combat force, clearly an admiral should be in charge. If access to the air is required and air assets are the primary or sole combat force employed, it should be under the overall command of an Airman. The same logic should hold if and when space is the focal area of operations or Space Force assets will be the primary combat force; it should be commanded by a Guardian.

A Dedicated Military Service

I have argued elsewhere that the purpose of military power is not to win wars, for that would mean whenever the military is not engaged in war, much less winning, then it is not fulfilling its purpose and should therefore be abandoned.² Rather, the purpose of the military is to be prepared, and when called upon by the legitimate governing authority, to maximize violence within the constraints and limitations placed upon it by that authority. This broad purpose allows for peacetime training and readiness, recognizes civilian control over the military, and highlights the role of violence in war so to discourage casual or inappropriate use of the military.

Note that maximizing violence is contextual, not spasmodic. A single bullet or bomb can maximize violence depending on the target of a military response, and spacepower support is essential to America's ability to precisely target and thereby limit collateral damage and casualties. Note, too, that this is not a definition that requires warfighting. Its definition is based upon the ancient military axiom (paraphrased), *si vic pacem, para bellum*. If you want peace, prepare for war.

Preparation is also the essence of deterrence. To the extent that one party can credibly threaten others with unacceptable harm should they violate some specified condition, that party can reasonably presume the others will comply. Deterrence requires both capability and the will to carry out the deterrent threat. Without both, deterrence is not credible and may even provoke the action it is meant to deter.

Even so, deterrence only works until it doesn't, and then it fails utterly. When the other party believes it can achieve what it wants despite the deterrent threat, it may very well violate conditions set by the deterring party. When that happens, the only option left is to defend the object of the deterrent threat or to concede it.

For too long America has relied solely on the deterrent threat of a terrestrial-based response to prevent an attack on any of its space-based assets. There are at least two problems with this. Since the deterrent *threat* is usually a forward projection of power via land, sea, or air forces, and since those attacks increasingly require the support of space forces to work with precision and efficiency, the *capability* of the threat is undermined. Second, since an effective space attack is unlikely to directly and immediately harm human beings, a response on Earth that could get people killed lacks both proportionality and reciprocity—thereby undermining the *will* to respond.

Space warfare is different than operational warfare in other domains and requires specialized warfighting expertise, but it is not different in the essential principles of war. The context changes but not the strategy. Today, no state relies more on spacepower for its national security and economic well-being than the United States. Space provides an asymmetric advantage for America, its Allies, and its partners. If something were to occur to take space away—some combination of solar flares, micrometeorite showers, or hostile attacks—the resulting economic crisis would be globally

2. See Everett Carl Dolman, *Pure Strategy: Power and Principle in the Space Age and Information Age* (New York: Frank Cass, 2005).

crippling. Transportation and electrical power infrastructure would seize, internet commerce and international finance would stop cold, and food production would plummet. America's ability to project force abroad would, at least temporarily, halt.

Accordingly, the US Space Force is charged with ensuring free and unfettered access to space for all who would go there with peaceful intent, but in times of conflict or war, it must ensure access to America, its Allies, and partners while *denying that access* to its enemies. Currently, the Space Force must do that with no combat ability *in* or *from* space. Can you imagine the Navy having the mission to ensure access to the oceans in time of peace, but to deny that access to US adversaries in time of war (which is its mission, by the way), and do so without placing weapons on board ships, boats, or submarines? The Navy would say you're out of your mind. If a military service is denied weapons—its tools—then give the job to someone else.

Conclusion

No one should want to fight a war in space, or in any other domain for that matter. Yet, nation-states have not abolished war nor discarded their military capacity. Military power persists to deter hostile states and organizations, to defend the state when deterrence fails, and to intervene beyond the state's borders when other methods are unlikely to succeed.

Today we face an historical paradox. For the first time in modern history, a state that relies on access to an area known to be *vital* for its national defense and security—the loss of which would be an Achilles heel—like Achilles, refuses to defend or even protect this critical area. The world cannot afford to lose access to space, and America must be prepared to defend space assets should they be threatened and attacked. If the US Space Force is expected to accept the role of martial defender of space, then it must be allowed to develop, deploy, and operate weapons *in* space.

To do so, the culture and mindset of the newest military service must change—Guardians must think and act like warfighters. Because of the global nature and vast distances of space operations, only weapons in space can defend determined attacks into and within space, and the only military service that can prioritize space defense is the US Space Force. By declaring space a warfighting domain, the US Space Force has embraced the logic that will maximize its value in the Joint fight. Æ

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